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Crude Oil Production Situation Better

Highest daily average estimated total production in 1927, week ended July 30, 2,587,105 bbls. Lowest in 1927, Jan. 22, 2,360,789 bbls.

Seminole and St. Louis About at Peak. Potential of Winkler Shows Decline. Plan Santa Fe Springs Curtailment

By Andrew M. Rowley

Highest daily average estimated light oil production in 1927, week ended July 30, 2,102,385 bbls. Lowest in 1927, Jan. 1, 1790,720 bbls.

Developments in the petroleum industry indicate an improvement in the crude production situation and a brighter outlook than has obtained for some time as far as this branch of the industry is concerned. With the flush fields of Oklahoma producing at capacity to obtain a gauge on potential output for proration purposes, that State on Tuesday of this week produced approximately 760,000 barrels, or 60,000 barrels in excess of the output allowed under the order of the State Corporation Commission. Efforts will be continued this week to bring Oklahoma's production within the permitted figure. The bright spot in the picture in Oklahoma is the fact the big drilling campaign in the Little River and St. Louis Pools has passed its peak and the Seminole area may be expected to register declines in the very near future. The St. Louis Pool probably will maintain its present level of output for some time but no material increase is expected. Water intrusion is being felt in St. Louis, also.

The water encroachment situation in Winkler County has proved the best argument in favor of pinching in wells there as this curtailment will result in a greater ultimate recovery. In addition it is believed Winkler has passed its peak, the latest figures on potential production showing a decline of more than 9,000 barrels.

Operators of the Santa Fe Springs Field in California will meet this week to endeavor to formulate definite plans for preventing wasteful production from the deeper horizon recently discovered there. That field is the big menace in the situation at this time and whatever is done to develop the deep sand conservatively will be of immense aid in stabilizing the general situation.

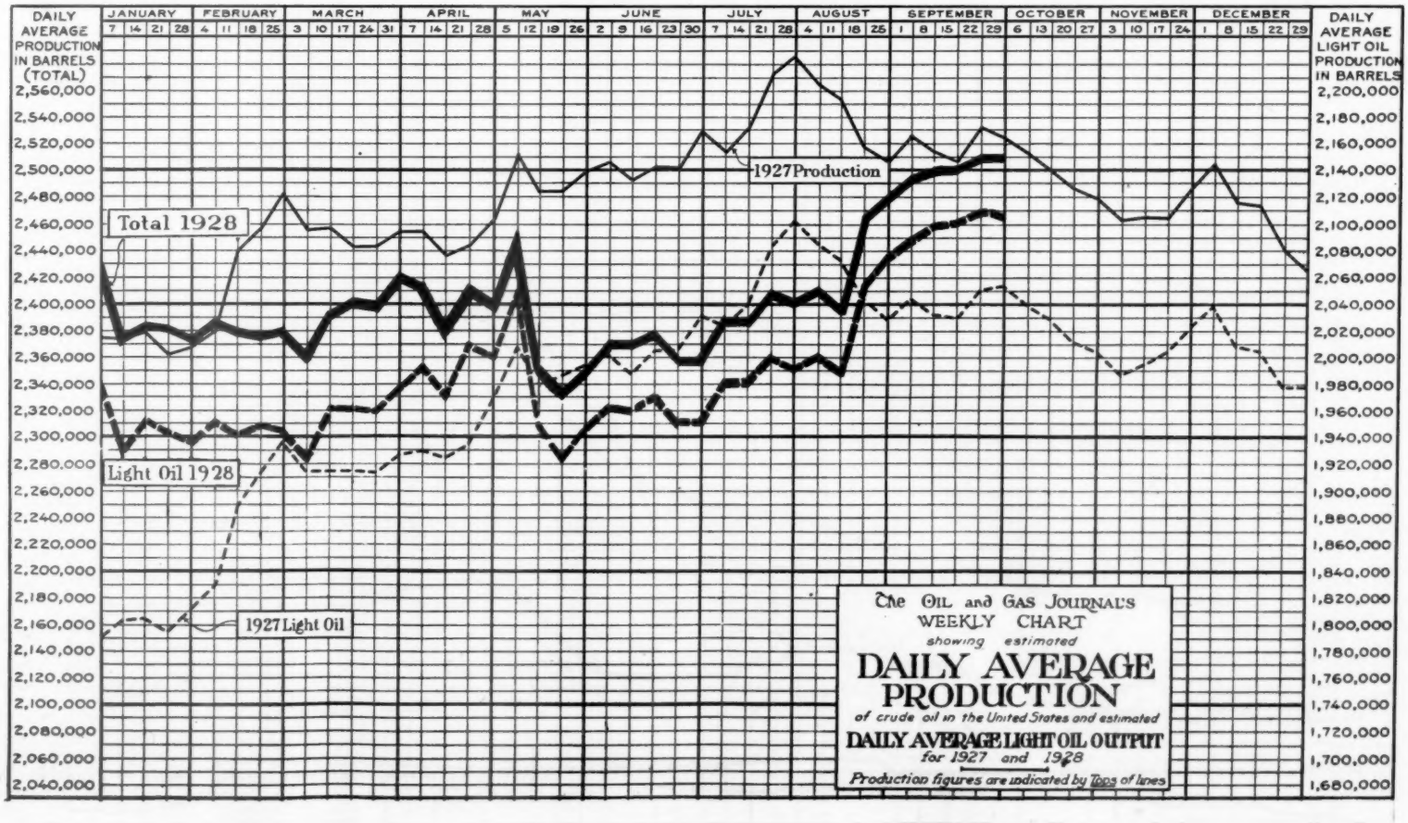
The enormous consumption enjoyed by the industry is emphasized in the Government's report for August which showed that despite the fact crude oil production in August averaged 78,000 barrels daily greater than during July, stocks of all oils decreased 2,458,000 barrels in August, this being the largest decrease since September, 1926.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended September 29, and a comparison with the previous week follows:

	Sept. 29		Sept. 22	
	Light	Heavy	Light	Heavy
Oklahoma—				
Tonkawa	12,045	.....	11,835	.....
Burbank	27,815	.....	27,860	.....
Other Osage Fields	26,960	.....	26,915	.....
St. Louis-Pearson	118,770	.....	122,080	.....
Cushing and Shamrock	19,970	.....	19,840	.....
Bristow	20,765	.....	20,730	.....
Allen	22,690	.....	21,070	.....
Seminole	315,040	.....	309,165	.....
Northern Miscellaneous	112,395	.....	113,485	.....
Southern Fields	58,685	.....	58,780	.....
Total Oklahoma	735,135	.....	731,760	.....
West Texas—				
Hendricks	166,408	.....	168,285	.....
Yates	68,521	.....	69,136	.....
Remainder	109,620	.....	113,090	.....
Total West Texas	344,549	.....	350,511	.....
North Louisiana	32,225	6,640	32,260	6,675
Arkansas	28,750	55,575	29,510	55,620
North Central Texas	143,907	.....	145,760	.....
Texas Panhandle	64,690	.....	61,945	.....
East Central Texas	22,859	.....	22,710	.....
Kansas	99,115	.....	99,515	.....
Total Mid-Continent	1,471,230	62,215	1,473,971	62,295
Gulf Coast	.....	132,745	.....	130,942
Southwest Texas	.....	28,933	.....	28,564
Eastern	112,000	.....	112,000	.....
Rocky Mountain Area	82,127	.....	80,286	.....
California—				
Santa Fe Springs	37,000	.....	38,500	.....
Long Beach	191,500	.....	193,000	.....
Torrance	2,000	14,750	2,000	15,000
Huntington Beach	51,500	.....	51,500	.....
Dominguez	11,000	.....	11,000	.....
Inglewood	18,000	11,500	18,000	11,500
Ventura Avenue	52,500	.....	51,000	.....
Seal Beach	27,000	.....	27,000	.....
Remainder of State	54,000	153,100	54,000	152,250
Total California	444,500	179,350	446,000	178,750
Total United States	2,109,857	403,243	2,112,257	400,551
Grand Total	2,513,100		2,512,808	

→ **Total Increase, 292 Bbls.; Light Oil Decrease, 2,400 Bbls.** ←



Few Changes in Oklahoma Market

Gasoline Movement Continues Favorable Although Prices Show a Tendency to Weaken. Wide Spread in Kerosene

By W. T. Ziegenhain

The Oklahoma refinery market passed through an uneventful week with gasoline shipments going out at a favorable rate although prices showed a tendency to ease off further. Some of the larger refiners are storing a portion of their production and maintain an open quotation at 9¾ cents but lower priced material is freely offered by others. Some strength has been given the gasoline market through the revision in the quantity discount schedule in the Standard of Indiana territory on October 1 which has the effect of an advance in the retail market but this factor is overshadowed by the fact there is a lesser demand as winter is approached. As yet there has been only a slight revision in crude runs to lessen the supply.

Natural gasoline has remained practically unchanged with a continuation of a stable market expected over October. Refiners are calling for more natural gasoline to blend for winter motor fuels and with the natural gasoline production in the Seminole proving to be less than anticipated, there is a very optimistic view taken of the immediate future of prices. In addition, there have been several export inquiries made during the last week showing the market will be supported at any dip. While no material was moved to export points, some business was expected to be closed very shortly. The only factor that might keep natural gasoline prices from at least holding their present level is the fact the refinery market is slowly weakening. Most manufacturers recognize the refinery gasoline market as a very important factor now and predict natural prices will vary within a narrow range on either side of the refinery price.

Kerosene was offered freely at a wide range of prices. Some refiners who have established outlets for their production say they are having no difficulty in getting a top price for all they manufacture, while it is also true that other material is appearing on the market daily which is being offered considerably below this price and it does not find an outlet. Quality is given as an explanation for the price range.

Distillates have moved rapidly. The high gravity distillates have been the more popular. Thus far the demand for the low cold test gas oil and heavy distillates has not come up to expectations and has not replaced the high gravity distillate demand as was first thought likely this year, due to improvements in the burner design. This is explained possibly by the fact the high gravity distillate is used in the smaller installations and these fires are lighted early in the year and operated only a few hours a day. The heavier oils are used on the larger installations and they will not be started until the temperatures get lower and then they will be operated without interruption.

REFINED MARKET BAROMETER

There was a continued weakening in the refined oil market in all sections with the exception of California during the past week. Gasoline was being freely offered throughout the East and Mid-Continent at prices below those of last week, the balance of the products being more freely offered but at last week's price level.

Mid-Continent—Gasoline weakened slightly. Natural gasoline showed very little change with the prediction of higher prices over the immediate future. All grades of lubricants were freely offered with cylinder stocks and bright stock moving at a favorable rate. Wax continues firm, but there is a division of opinion regarding the likelihood of prices continuing to advance.

Atlantic Seaboard—Gasoline was openly quoted at last week's level but there was plenty of material available at one-fourth cent under this general price. Kerosene prices were advanced as the export demand took all material available. The balance of the market remained unchanged.

Pennsylvania—Kerosene weakened, the balance of the oils remaining practically unchanged. Gasoline and lubricants were more freely offered.

Chicago—There was a favorable demand for furnace oils and gasoline but prices remained unchanged. Fuel oils promise to be given a play as the colder weather is approached and some grades have been fractionally advanced.

California—Gasoline prices were advanced as the export demand relieved the market of considerable spot material. The balance of the oils remained unchanged.

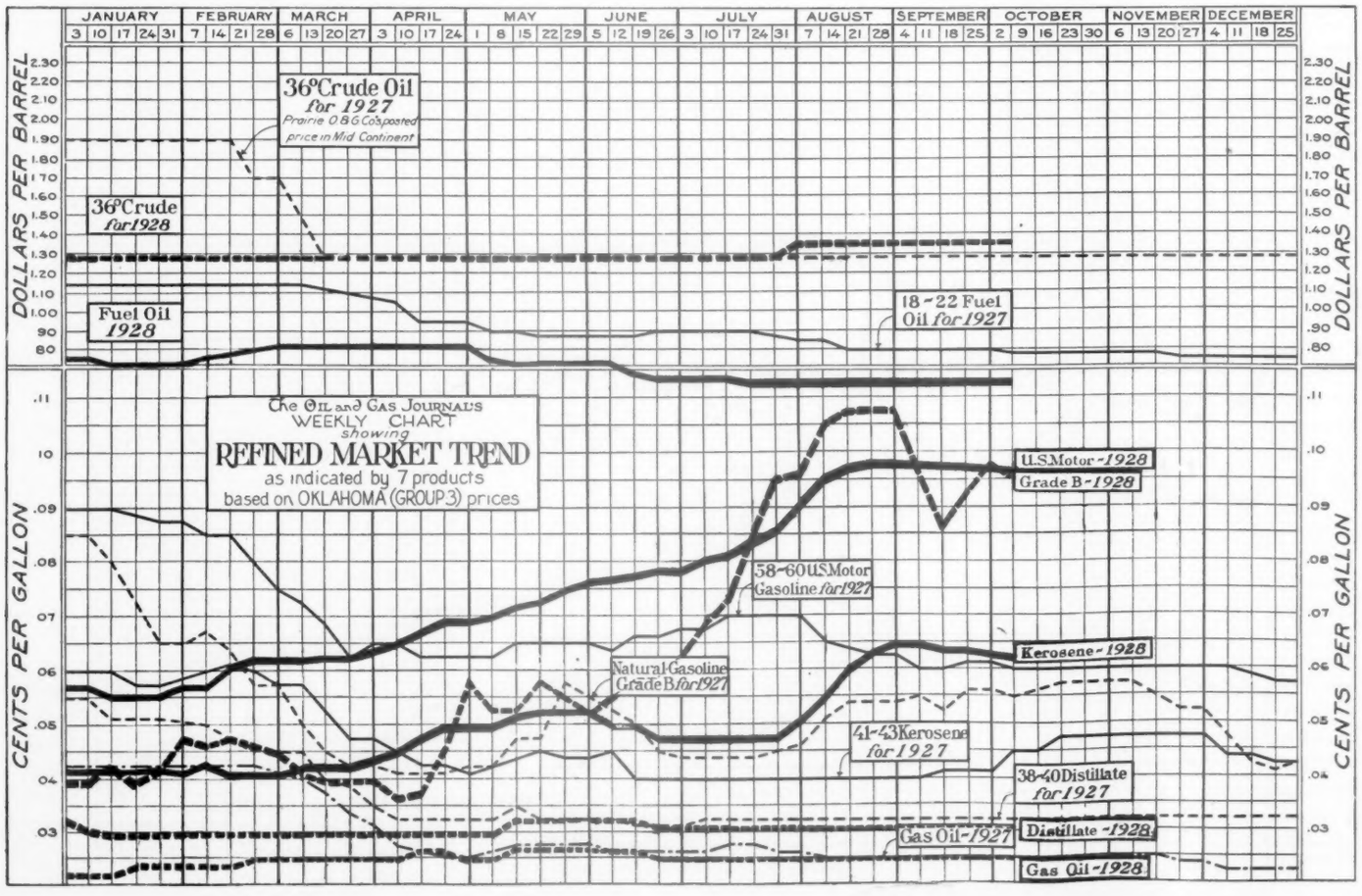
Gulf Coast—There was no change in the general market as the expected increase in the demand for lubricants failed to materialize. Fuel oil and gas oil remained very weak.

Fuels Firm

Fuel oil and gas oil prices continue to remain at the levels set many months ago. Many refiners and marketers feel prices stand a chance of going higher in the immediate future and look for a play to be given the fuel market before the middle of the month. No one expects prices to advance materially because of the large stocks being carried by refiners in all sections, but it is possible prices on the low sulphur content and the low cold test fuels may command a premium of say 5 cents to start with and then the general market advanced 2½ or 5 cents a barrel over the month, as the increased seasonal demand develops.

The lubricating oil market also witnessed very little change. There was a good movement of bright stocks and cylinder stocks and prices in these two lubricants were well supported but the balance of the list did not show equal strength and the larger orders brought slight price concessions. Wax continued firm as varied reports regarding the eastern market were received in the Mid-Continent. With the coming of colder weather production is sure to be materially increased but refiners say the increased demands will fully offset this fac

(Continued on Page 136)



Repressuring Bowlegs Pool, Seminole

Indian Territory Illuminating Oil Co. Trying Interesting Experiment. Results Fairly Satisfactory So Far

By J. L. Dwyer

There have been several attempts to repressure the Wilcox sand in the Greater Seminole Field, and the work which is now being done by the Indian Territory Illuminating Oil Co. in the Bowlegs Pool is probably the most successful repressuring which has been done in the region, but according to the officials of the company, there is much yet to be accomplished before the work can be pronounced an economic success.

The experiment which is now being conducted on the Indian Territory Illuminating Oil Co.'s Goforth lease in Section 15-8-6, was originated not through any desire upon the part of the company to stimulate its daily production from this lease, but was the direct result of the slow and steady decrease in production on this lease, when some wells had declined down to the point where it was unprofitable to operate them.

Since this same condition holds true of a great many wells in the older parts of the Seminole Field, and in addition to that, since many wells have already been abandoned because cost of operation has eliminated any chance of profit, the question of repressuring the Greater Seminole area is one which will have a widespread influence upon the future of the oil production of Oklahoma. The assertion has repeatedly been made by engineers and others interested in oil production that the use of the air-lift method of producing oil has meant the end of settled production by normal means, as it is thought that in the majority of cases when the air lift is through with the wells, there will be a limited time until the wells must be abandoned. If the use of repressuring agencies can change this condition another picture of the future of oil production in this State will be unfolded.

Obstacles to Overcome

There have been several serious obstacles in the path of successful repressuring work at Seminole. The alleged irregularities of the Wilcox sand, with its dozens of high and low spots, and the supposed fractures of the sand, have been conditions which are not helpful to this work. The most ideal condition for successful repressuring work is a field having a blanket sand condition which is constant through the entire region. Seminole is far from this condition.

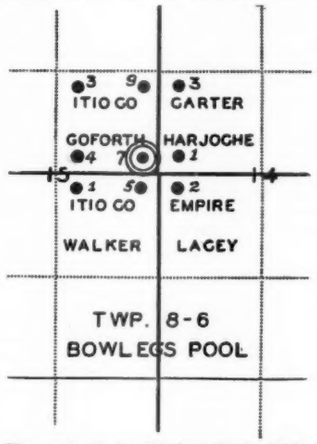
Various water irregularities in the field have also presented serious troubles and have affected the migration of the gas used for repressuring. The water has appeared at irregular intervals in almost all sectors of the Seminole pools, instead of being confined to the edges of the structures. This fact has hampered the proper distribution of the repressuring agencies at Seminole.

When it is considered that the entire area has produced approximately 250,000,000 bbls. of oil, and 1,000,000,000 feet of gas, and the approximate cubic space which is normally occupied by this vast amount of substances is remembered, it will be agreed that there is in the Wilcox sand, a tremendous void which will have to be filled with the repressuring agency before any appreciable benefit to the work of oil recovery would be noticed. It is this void, and the huge amount of gas which would be necessary to fill it before any pressure could be restored upon the sand, which has prompted the thought that this sort of work in Seminole would be extremely difficult and terribly expensive. An abundance of gas would be required.

The present experiment is still in its early stages and, according to the officials of the company, has shown some slight increases in production, but is not far enough advanced to be termed a success.

Details of Operation

Some previous attempts to repressure Seminole by a drive system used air as a repressuring agent, but in the work of the Indian Territory Illuminating Oil Co. gas was used. The well marked on the accompanying drawing with a double circle is the injection well through which the gas is driven down to the Wilcox sand. This well is No. 7 Goforth. This well was one of the poorest wells in this part of the field and was one of the last to be completed in this sector. At no time did it have a good production, the best daily yield it ever made being 90 bbls., and the total cumulative production of the well from completion to date is 7,998 bbls.



The part of the Bowlegs Pool which is being repressured. The double circle marks the well through which the gas is being sent down to the sand.

The key well used for injection had a very tight, hard, sand body and, according to the engineers of the company, this among other reasons was one of the prime considerations for its selection as a key well. There have been many who have been engaged in repressuring work in the past who have selected key wells on account of the fact that they formerly were big producing wells, and had a loose porous body of sand which yielded the oil. The gas was sent down these wells to work its effect upon the fluid in the adjacent wells. The engineers of the Indian Territory company purposely selected a well which was a poor producer, and which had a very tight body of sand, on account of their theory that the gas should be sent down through a tight formation in order to push the oil towards the looser sand body, and thus avoid having to drive the oil through the tighter formation.

Co-operative Study

Since the key well used for injection purposes in this case was located right on the line of the lease, and since any work done in this spot would have a direct effect upon the wells of adjacent lease owners, it was necessary for the company to try to join with the neighboring owners for a co-operative study of this work, and with that in mind, the company formulated a joint plan of action with the Empire Oil & Refining Co. and the Carter Oil Co., owners of the leases just across the fence from the injection well. The company itself owned the lease immediately south of the injection well.

The companies joined in the exchange of all records of wells which directly or diagonally offset the injection well, and it is through this exchange of records that the efficacy of the work has been measured. All wells which were offsets to the key well were equipped with adequate metering systems which measured the input and output gas both before and after the application of the repressuring work.

One fact which is believed to have contributed to the success of the work is the exceptional preparations which were taken to properly clean out the well before the introduction of the repressuring gas. The well was cleaned out as perfectly as possible, the bailer was run until there was absolutely no oil standing in the hole, and the face of the sand was cleaned. The theory of the Indian Territory engineers in this regard was that it is exceptionally difficult to push oil back through thhe face of the sand, and that the sand face acts as a check valve. The resistance offered by the oil to re-entry back into the sand is believed to be one of the most important fea-

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Uncle Joe Evans to Receive Medal

Ceremony Preliminary to Old Timers' Day at Petroleum Exposition. Other Events Also Arouse Interest

By Thomas F. Smiley

The designation of "Grand Old Man of the Oil Industry in Tulsa" will be formally conferred upon Joseph H. Evans, president of the Devonian Oil Co. and director of the Exchange National Bank, Friday noon, October 5, at a luncheon of the Tulsa Chamber of Commerce, when a gold medal, inscribed with the title, will be presented to him by Harry H. Rogers, president of the Exchange bank. The luncheon will be attended by leaders in the oil industry and in financial circles. Presentation of the medal to Mr. Evans, familiary known among his associates as "Uncle Joe," is a preliminary to Old Timers' Day, October 23, in connection with the International Petroleum Exposition to be held in Tulsa October 20 to 29. On that day the Grand Old Man of the Oil Industry in the World will be elected on the basis of length of service in the industry.

A gold medal will be awarded to the world's grand old man and all members of the Old Timers of the Petroleum Industry of the World Club, to be organized that day, will receive medals in commemoration of the event. In the evening the old timers will hold a banquet in the Mayo Hotel, with Mr. Evans as host.

Named as Old Timers

Nominated for membership in the Old Timers' Club thus far are: Mike McCool, Arondale, Okla.; L. D. Gwynne, Tulsa; J. J. Varner, Iraan, Tex.; John W. Gray, Marietta, Ohio; Silas M. Morrison, Tulsa; E. T. Johnson, Bradford, Pa.; John W. Dwigans, Tulsa; Edwin L. Fowler, Tulsa; John C. Looker, Bradford, Pa.; Walter Milne Dunham, Tulsa; Philip Klickner, Skiatook, Okla.; C. H. Doolittle, Winfield, Kans.; S. A. Megeath, New York City; Charles Haas, Tulsa; J. H. Evans, Tulsa; J. L. Campbell, Cleveland, Okla.; J. H. Mook, Fort Worth, Tex.; Carl E. Anderson, Tulsa; Jack Shirley, Tulsa; J. B. Crisman, Tulsa; T. J. Boyer, Vern Station, Okla.; Frank Humiston, Tulsa; W. A. Hughes, Oil City, Pa.; Horace Johnston, Corsicana, Tex.; John L. Mckown, Sapulpa, Okla.; John Markham, Sr., Wichita, Kans.; Alex Stephenson, Tulsa; W. G. McClune, Dewey, Okla.; E. G. Humes, Mounds, Okla.; Charles Brant, Indianapolis, Ind.; Harry Brant, Claremore, Okla.; C. H. Day, Shidler, Okla.; Thomas Chestnut, Tulsa; L. S. Albee, Seminole, Okla.; I. M. Gearhart, Tulsa; George F. Wyvell, Okmulgee, Okla.; James V. Cully, Pampa, Tex.; W. P. Roach, Oilton, Okla.; Tom Eustice, Tulsa; E. H. Tomlinson, Tryon, N. C.; George C. Partridge, Inola, Okla.; A. K. Crichton, Inola, Okla.; W. M. Mills, Osawatomie, Kans.; Roy C. Williamson, Fort Worth, Tex.; G. F. Brown, Drumright, Okla.; Samuel Plumer McCalmont, Franklin, Pa.; U. E. McDermott, San Antonio, Tex.; Guy D. Seguine, Beggs, Okla.; Joseph Mortimer, Washington, Pa.; F. A. Boyer, Temple, Tex.; John Christie, McCamey, Tex.; C. M. Trowbridge, Nowata, Okla.; John H. Markham, Sr., Peabody, Kans.; John H. Reigel, Kane, Pa.; John C. Blood, Conneaut, Ohio; E. W. Boyd, Wichita, Kans.; Jack Sanders, Claremore, Okla.; Joseph H. McDermott, Morgantown, W. Va.; Tim Cushing, Bristow, Okla.; James B. Redic, Stillwater, Okla.; A. R. Stoughton, West Sunbury, Pa.; R. H. Holmes, Mount Jewett, Pa.; Henry B. Webb, Kansas City, Mo.; Edward R. McMullen, Kenbro, Kans.; M. R. Haymaker, San Antonio, Tex.; G. L. Fowler, Tulsa; Martin C. O'Brien, Ramona, Okla.; James W. Walker, Bradford, Pa.; William Pat Malone, Tulsa; R. J. Bussard, Tulsa; B. B. Stewart, Brownsville, Tex.; Cyrus Lester, Tulsa; F. M. Kleckner, Skiatook, Okla.; Joseph A. Kennedy, Okmulgee, Okla.; James McCab, Sapulpa, Okla.

Engineers to Meet

On the two days preceding the opening of the exposition, October 18 and 19, the meeting of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers will be held in Tulsa. Papers of special interest to the oil industry will be delivered by leading engineers from all parts of the United States. These will deal with production problems and will announce the results of research work.

Almost a score of oil companies will be represented in the fourth annual petroleum first aid meet to be held October 22 in connection with the exposition. J. Burr Gibbons, general manager of the exposition, said this week that five companies already had announced their intention of sending nine teams. The Empire Companies, the Mid-Continent Petroleum Corp., the Ohio Oil Co., the Barnsdall Oil Co. and the Gypsy Oil Co.

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Discussions of Engineering Problems

EDITED BY R. VAN A. MILLS, PETROLEUM ENGINEERING EDITOR

FUNDAMENTAL PRINCIPLES OF FLOWING WELLS

By T. A. Hall, Chief Engineer, Tidal Oil Company

Probably there are no petroleum engineering problems that need clarification so badly as those involving the fundamental principles of flowing wells. If you want to start an interesting argument, get a group of petroleum engineers together, the best you can find, and propound some fundamental questions like these:

1. Can you flow an oil well through tubing, without any perforations or booster collars, while oil stands above the foot of the tubing, between the tubing and the casing: First with an open casing head; and second, with a closed casing head?
2. Is it necessary to have submergence in a well flowing either naturally or by the gas lift?
3. What is the operating submergence in a flowing well?
4. In an air lift well, should the height of lift be figured from the foot of the tubing?
5. What are the energy losses in a flowing well?
6. What is the best method by which to calculate the efficiency in a flowing well?

Any of these questions are apt to start a lively argument. Of course there are numerous modifying conditions but no matter what modifying conditions are accepted, there will still be room for argument upon some of the foregoing questions. With these differences of opinion in mind, the writer is publishing these notes under the discussions of engineering problems in The Oil and Gas Journal for consideration and discussion by those who are interested.

Natural Flow Through Casing

A well will flow naturally through the casing when the total available energy (the energy supplied by hydrostatic pressure, plus the energy of the compressed gases associated with the oil) is sufficient to supply the energy needed to meet all the operating requirements for flowing the well. These will be discussed later.

Natural Flow Through Tubing

In some cases a well will not flow naturally through the casing, but will flow through tubing hanging in the hole. Let us first consider this problem, without the use of any tubing packer. The cross sectional area inside of the tubing is, of course, much smaller than that of the casing, consequently the velocity of flow through the tubing is greater than that through the casing. In the relatively large casing the velocity is so slow that it causes much energy loss in slippage and there is not enough energy available to bring the liquid to the surface. But with the higher velocity in the tubing the slippage losses are decreased and the friction losses (energy consumed in overcoming friction) are increased. The net difference between the decreased slippage work-loss and the increased friction work-loss is sufficient useful work added to the operation to cause the well to flow. As these factors controlling the flow of a well are studied, the importance of proper velocities of flow become more and more apparent. The problem becomes largely one of establishing and maintaining the proper velocities of flow.

A well flowing under the foregoing condition, with the casing head open, may have a liquid column standing between the lower part of the tubing and the casing, the static or head pressure of which is equivalent to the pressure of the gas at the bottom of the tubing. Under these conditions, with sufficient dead liquid in the hole, a well may be operated with the casing head open without any appreciable loss of gas flowing up the annular space between the tubing and casing.

It is possible, however, that the tubing may be too small for the volume of gas the well produces. Under these conditions the friction of flow plus the other forces necessary for flow may require a gas pressure at the bottom of the tubing in excess of the submergence head (static or head pressure of fluid standing between the tubing and the casing) which the formation can maintain. In this case the well may stand dead or the gas may break through the fluid in the annular space between the tubing and casing without flowing the well.

For intermediate conditions, where some but not quite enough flow occurs through the tubing, it is in some cases possible to shut the casinghead in and build up enough submergence pressure with gas (plus the pressure of whatever fluid column remains) to flow the well.

A packer at the bottom of the tubing prevents the maintenance of gas pressure or liquid head in the casing but the equivalent of these is obtained by direct pressure from the formation. In this sort of installation, as in any other, the formation must have pressure equivalent to the necessary submergence.

The Air Lift

If the formation energy at the bottom of any well is insufficient to supply the energy required for natural flow, part of this energy may be used in maintaining submergence and the deficit for flowing may be supplied artificially from an outside source, this energy being delivered in compressed air or compressed gas at some point in the well. Outside of these simple statements of fact, there are many differences of opinion regarding the fundamental principles of the air lift, the work performed in its various phases of operation, and the calculation of its efficiencies in operation. The following notes are presented to bring out discussion on these important points and to clarify our ideas upon the fundamental principles involved. The following statements of fact are fundamental. They apply equally well to natural flow or air lift flow, and to one stage flow or to each stage in a multi-stage flow.

1. It is impossible to operate an air lift without operating submergence, either an actual liquid head, or its equivalent energy supplied from the formation.
2. All energy expended from the bottom of the air string is exactly equivalent to the submergence energy.
3. Operating submergence is the operating pressure (in pounds gauge) at the bottom of the air string, reduced to an equivalent head in feet of an unaerated column of the liquid being flowed. When there are three strings of pipe in the hole there is actually a liquid column of this height standing in the well.
4. With air or gas passing down the tubing, the pressure at the bottom is given by the formula:

$$P = \sqrt{P_1^2 - \frac{Q^2 L G}{4866 D^5}}$$

where

P = Pressure at bottom of tubing in pounds per square inch, absolute
P_1 = Pressure at top of tubing in pounds per square inch, absolute
Q = M cubic feet per 24 hours at 14.4 pounds per square in absolute
L = Length of tubing in feet
G = Specific gravity
D = Diameter of tubing in inches.

The result obtained by this formula is uncorrected for temperature.

In practically all cases where air is passing down the casing, the velocity is so low that the pressure drop may be neglected. In other words, for practical purposes the pressure at the top and the bottom of the air column may be considered the same.

5. The lift is the difference in elevation between the inlet of the separator and the bottom of the air string, minus the submergence.
6. The useful work done by the lift, in foot-pounds, is the pounds of liquid elevated through the feet of lift.
7. The lost work is, (a) friction work-loss; (b) slippage work-loss; (c) work of lifting all gases; (d) work of accelerating liquids; (e) work of accelerating gases; (f) energy left in gases at separator pressure; (g) heat losses, and if efficiencies are to be determined back to the compressor piston, will include, (h) heat losses and (i) friction from the piston to the bottom of the air string.
8. The work in foot-pounds done by the natural formation gas in expanding from submergence pressure to pressure in separator, is found by the formula:

$$\text{Foot-pounds} = 144\ P\ V\ \text{Log}_e\ R$$

$$\text{or} = 331.57\ P\ V\ \text{Log}_{10}\ R$$

where V = volume of such gas corresponding with the absolute pressure, P, at which the volume is determined.

$$R = \frac{\text{Submergence pressure, absolute}}{\text{Separator pressure, absolute}}$$

This formula applies to isothermal expansion in the well where the temperature of the liquid and the earth temperature and conductance prevail.

9. The work in foot-pounds done by compressor gas in expanding from the submergence pressure to the pressure in the separator is found by the same formula as (8).
10. The work in foot-pounds delivered by the compressor pistons is given by the formula:

$$144\ \frac{N\ K}{K-1}\left(R^{\frac{K-1}{NK}} - 1\right) PV$$

where

N = number of stages of compression
K = 1.41 for air and 1.22 for average natural gas
R = Ratio of compressions
V = Volume at its corresponding pressure, P, absolute.

11. The energy expended in the natural gas and the compressor gas in expanding from the separator pressure to atmosphere is given by the same formula as (10).
12. The velocity of the flow at the bottom of the tubing, the separator inlet, or any other point where the pressure is known, is given by the formula:

$$\text{Velocity in feet per second} = \frac{11.95\left(B + \frac{2.56\,V}{P}\right)}{D^2 - d^2}$$

where

B = Thousands of barrels of liquid per day
V = Total volume of gases in M cubic feet, per day at 14.4 pounds absolute.
P = Pressure in pounds per square inch absolute at point of velocity determination.
D = Internal diameter of casing in inches, where flow is up the annular space between tubing and casing.
d = Outside diameter of tubing where flow is up the annular space.

This is developed from the fundamental formula,

$$\text{Velocity} = \frac{\text{Cross sectional area of flow string}}{\text{Volume flowed}}$$

and may be subject to some error on account of assuming the same solubility of gas in oil at all pressures, and equal velocities.

13. The work of accelerating the liquid and also the work of accelerating the gases, is calculated by the formula:

$$\text{Foot-pounds} = \frac{W\ (V_1 - V)^2}{64.4}$$

where

W = Weight in pounds of liquid or gas
V_1 = Velocity at separator inlet
V = Velocity at bottom of tubing.

This value then represents the supplied kinetic energy the flow stream has, at velocity V_1—V, and which is wasted as it is not converted into useful work.

14. The work in foot-pounds of lifting the gases is the product of the pounds of gases and the lift in feet.
15. All values of all equations must be expressed in homologous terms.
16. The lift efficiency may now be obtained by dividing the useful work (6), by the supplied energy (natural and artificial) and the relation may be determined between various individual phases of the operation, except slippage and friction in the flow column, which must be calculated together, as there is no information now available by which they may be calculated individually.

Remarks by Editor

What we need in petroleum engineering and especially in gas lift work is information that can be applied in field practice. Formulas to the n'th degree of accuracy, embracing all the principles of higher mathematics, are of little if any immediate value if we cannot use them in our field operations.

Mr. Hall has presented a thoroughly practical outline of some of the problems involved in flowing wells. He has purposely avoided the highly complicated applications of calculus in the more theoretical refinements of the problems under discussion.

Corrections for temperature changes, variations in the solubility of gas in oil at different temperatures and pressures, and differences in the velocities of the oil and gas at any point in the flow string have been omitted. True isothermal expansion has been assumed for convenience in practical application, and for the same reason, an intermediate or average value for the ratio of the specific heats of different natural gases has been used for adiabatic expansion. Mr. Hall's purpose has been to put these problems on some concrete basis for our practical use rather than to attempt absolute accuracy through the development of formulas in terms of calculus which cannot be conveniently applied. He is successfully applying the principles and the formulas that he has outlined. It is hoped that engineers who are applying other methods will enter this discussion in order to broaden our knowledge of the subject and to assist us in making the calculations necessary for the most efficient operation of flowing wells.

AN EFFICIENCY PROBLEM FOR DISCUSSION

Submitted by Alexander Boynton and A. C. Harris of San Antonio, Tex.

The following problem should be of interest to the technical readers of The Oil and Gas Journal and we will be glad to have it discussed in your columns:

"We are flowing our oil wells under conditions where we can measure with absolute certainty the exact pressure used, the exact amount of fluid produced and the exact number of cubic feet of gas used in the operation. What we can not with certainty determine is the amount of foot pounds of energy liberated by this natural gas at, for illustration, 100 pounds gauge pressure. Our table shows us that air at 100 pounds pressure when compressed isothermally contains 4,349

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Gas Big Problem at Santa Fe Springs

Operators Will Hold Meeting October 4 to Formulate Conservation Plans. Plan to Repressure Meyer Zone

By L. P. Stockman

LOS ANGELES, Calif., Oct. 1.—California's biggest conservation movement is well under way after several weeks of preliminary surveys and Santa Fe Springs' operators will soon have a chance to signify their intentions with respect to the proposed repressuring and storage of natural gas in the Meyer horizon of that field as the executive committee of the Chamber of Mines and Oil has issued a call for a meeting to be held October 4 for the purpose of electing an operating committee and the ratification and formulation of a definite future policy. I have interviewed a number of independent progressive Santa Fe Springs' operators and almost every one has unanimously endorsed the proposal to eliminate waste by utilizing excess gas for repressuring and storage in the Meyer zone. The success of this vast mutually co-operative undertaking with its thousand and one complications is therefore definitely assured, although it is imperative that immediate favorable action be taken inasmuch as the deep Buckbee zone at Santa Fe Springs will be doing its stuff a lot sooner than is generally believed.

Attention was directed to the probable initiation of conservation work at Santa Fe Springs in The Oil and Gas Journal several weeks ago. Even in the face of almost insurmountable obstacles this proposed gas conservation constitutes the most important constructive step ever undertaken in California up to the present time as its ultimate possibilities are almost unlimited. The movement now under way is especially significant in that it differs from other conservation measures undertaken in the past as it anticipates a condition of the future and is constructive to the maximum extent. The policy to be followed and the methods to be employed are still in the formulative stage but when the final details are completed and the entire program put into effect the entire oil industry will congratulate California producers on their initiative and success in completing the first comprehensive conservation policy ever undertaken in an intensively drilled town lot field where in many instances drilling crews can swap yarns from one rig to another.

Four Sands at Santa Fe Springs

The Santa Fe Springs field, located about 13 miles southeast of Los Angeles and approximately six miles northwest of the West Coyote field or Orange County, occupies a slightly higher elevation than the surrounding country but it can in no way be considered a prominent topographic high such as characterizes geographic conditions at Montebello, Coyote, Inglewood or other recent fields. There are four distinct oil horizons in the Santa Fe Springs field, each being separated from the other by an intermediate water sand. The upper, or Foix zone, a very limited horizon in both production and areal extent and having a maximum thickness of 180 feet, is picked up at approximately 3,500 feet on top of the structure, while the top of the second or Bell zone is encountered at about 3,680 feet. The Meyer horizon, logged at 3,975 feet on the apex of the structure and approximating 750 feet in thickness, is the largest and most productive of the various zones developed up to date but the output of this sand which, incidentally, has reached a semi-depleted condition, will in all probabilities be greatly exceeded by the recently discovered deeper Buckbee zone which is encountered at 5,600 feet. The Foix and Bell zones have become greatly depleted since discovery and for this reason the Meyer will be utilized exclusively for the storage of excess natural gas resulting from drilling operations in the Buckbee zone.

Practically all development work in California fields is done with rotary equipment and for this reason some difficulty may ultimately be experienced in passing through the Meyer zone due to its depleted condition as this makes it very susceptible to contamination from rotary drilling mud. The loss of circulation is a very serious factor when developing a high pressure sand and the California State Mining Bureau has just issued explicit instructions that every well producing from the Meyer zone in the vicinity of a drilling well in which considerable loss of mud fluid occurs would be shut down until circulation without material loss is restored. This is especially significant as George F. Getty's No. 17 Nordstrum, which has been burning for nearly two weeks, blew in out of control after circulation had been lost for about 15 days. It is quite evident that the Mining Bureau anticipates additional trouble with wells drilling through the Meyer zone and if this becomes general a temporary compulsory suspension of production activities in the Meyer sand may become necessary although of course this will only be undertaken as a last resort. The necessity of using extreme care during the development of the deep Buckbee zone lies in the fact that there is a probable high pressure gas sand located immediately 5,400 feet, or just above the deep Buckbee zone. George F. Getty's No. 17 Nordstrum, which has been ablaze and running wild for two weeks, adequately demonstrates the potentiality of the latter. The first gas zone found in this field was encountered during the early stages of work back in 1923. It is located about 1,600 feet above the top of the Foix zone and resulted in the loss of several drilling wells due to disastrous gas blow outs before its extent was definitely determined.

The Union Oil Co.'s No. 1 Alexander had the first trouble chalked up against this shallow but high pressure gas sand when it blew out and formed a vast crater after demolishing the rig and equipment. This well blew for several days at the rate of about 100,000,000 feet daily before sanding up. No. 2 Bell of the same company repeated the performance of No. 1 Alexander on January 22, 1923, while standing cemented at 2,016 feet but was subsequently brought under control only to be lost again a short time later while the bit was rotating ahead at 2,643 feet. The second blow above this horizon which may result disastrously unless kept under control by a copious use of heavy mud.

Little Repressuring Thus Far

A number of producing wells in the Santa Fe Springs field have been operating on gas lift for several years but up to the present time there has been no attempt to engage in repressuring or gas storage on a broad scale because of the diversified holdings and the general belief that town lot operators could not be expected to give their unanimous support. The proposal to undertake scientific conservation is therefore especially interesting at this time as it indicates a mutual appreciation of the obligation to eliminate waste and the benefits bound to accrue from a successful utilization of the inherent energy of natural gas. Two gas zones have already been discovered at Santa Fe Springs, one at a depth of 2,000 feet and another located around out was disastrous as this wrecked the hole and created a crater about 100 feet in diameter before burning itself out. The Union lost a third well a month later on February 23, 1923, when No. 1 Howard suddenly blew out while standing cemented at 2,203 feet. These disastrous gas blow outs demonstrated conclusively that a gas horizon of great potentiality existed around the 2,000 foot level and the Midway Gas Co. accordingly took steps to commercialize it such as has been done with similar zones in the Buena Vista Hills of Kern County. Several of these shallow gas wells at Santa Fe Springs, which averaged approximately 10,000,000 feet of gas daily, were subsequently drilled into production under control and ultimately reached commercial markets.

Large Gas Sand

The gas sand overlying the deep Buckbee oil horizon is apparently a zone of considerable extent but this will be passed up in the present projected gas conservation program as operators will have their hands full taking care of the natural gas production of the Buckbee oil horizon. This gas zone may play a very important part in the future work.

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Osage County as Poor Man's Field

More Liberal Regulations Attract Small Operator. Total of 17,432 Acres Sold at Average of $2.77 Per Acre

By James McIntyre

Is the Osage Nation to be the last resort of the Oklahoma small producer? Is it to become the "poor man's field" of Oklahoma? Events have worked to produce a condition that would seem to make it so. The most recent sale of Osage leases has strengthened the belief that it is so.

Where else in the Oklahoma oil country can an oil operator purchase acreage on a five-year-lease basis for 62½ cents per acre and a $1 a year rental?

In the sale at Pawhuska on September 27, 13 quarter sections were sold at $100 each. Thirty-four quarter sections were sold at prices ranging from $100 to $300, a total of 5,440 acres for $5,525, or $1.02 per acre.

Where in Creek, Okmulgee, Seminole, Pottawatomie, Carter or for that matter, any of the other leading oil producing counties in the State can 34 quarter sections with oil all around them be picked up at an average of $1.02 per acre?

The eyes of the small operator have been turned upon the heretofore forbidden ground of Osage County for various reasons, the principal of which are that there is hardly any shallow territory left in any part of the State that seems worth testing, and the deep territory is too big for any but the powerfully financed company or firm to risk money in. Another is that the United States Government, which has charge of the development of Osage County, through the Interior Department has liberalized the drilling regulations and lowered the minimum bid to be considered at auction sales. Formerly it cost no less than $300 for any lease and a well must be drilled within 12 months of the approval of the lease. This has been changed. One hundred-dollar bids are accepted and the purchaser is given five years in which to start a well.

Vast Undrilled Acreage

Notwithstanding all the work that has been done in Osage County in the last quarter of a century there is a vast acreage undrilled. Beginning at the county line separating Osage from Washington and Tulsa Counties the oil-bearing strata are at a relatively shallow depth where the drilling costs are low. From the Kansas line down to the city of Tulsa, the Bartlesville sand is found at from 1,265 to 1,640 feet and the Wilcox, where it has been found productive, is from 1,650 to 1,950 feet deep. Going westward the sands become deeper but in Ranges 8 and 7 the dividing line between east side and west side the pays are reached at depths ranging from 2,000 to 2,950 feet. Even the great Burbank Field on the west side, the largest field in Osage County and one of the world's most productive areas, produces from a 2,900-foot horizon.

Now, just how much oil is left undiscovered in Osage County can only be known by drilling for it, but that under present conditions it appears to oil men to be the best bet in Oklahoma for the small operator will bear up under a lot of argument.

The 126 tracts put up for sale on September 27 appears to have been well selected. They were meant to be sold. None of them was "passed" because of no bid. They were selected from acreage in Ranges 12, 11, 10, 9, 8, 7, 6, 5 and 4, and from north to south they included leases in each of the line of townships from the Kansas line down to the Arkansas River. They were well scattered and gave the oil man a wide play.

New names appear among the owners of Osage properties as a result of the sale. It is safe to say that if the government continues this liberal policy, future sales will further add to the list of owners of Osage leases.

Some Choice Spots Remain

Last Thursday's sale also demonstrated that certain parts of the county outside of Burbank continue to be regarded with high favor by oil companies. The Producers & Refiners Corp. paid $16,500 for the NW Section 19-24-8 in the Hominy Field and The Texas Company thought enough of the NW Section 12-23-7 to pay $61,000 for it. In the Grayhorse district the Marland Production paid $20,500 for the NE Section 21-23-7 and $10,000 for the SW Section 23-24-7, while the Prairie Oil & Gas Co. and Peters Petroleum Co. put up $20,000 for the NE Section 25-24-7.

Township 25-6, south of the main body of the Burbank Field, attracted bidders. A glance at the accompanying table will show where Tracts 102, 103, 104 and 105 were knocked down to the Gypsy Oil Co., Phillips Petroleum Co. and Prairie Oil &

(Continued on Page 136)

Magnetometer's Chief Use, Prospecting

Program of Work Should Be Prepared Carefully. Ideal Application Is to Determine Areas Favorable for Core Drilling

By L. Spraragen

PART TWO

The accompanying article is the second half of the first of a series covering the use of the magnetometer in oil field work and magnetometer surveys of six states in the Mid-Continent area. The first part of this article was published in The Oil and Gas Journal of September 27.

The magnetic field which the magnetometer is used to measure is due to the magnetic state of the earth. Two factors are necessary to state the condition of the earth's magnetic field at any point. These are the direction and strength of the field.

By direction of a magnetic field is meant the direction which a hypothetical unit positive pole would tend to move if it were left free to act when placed in the field under investigation. By strength

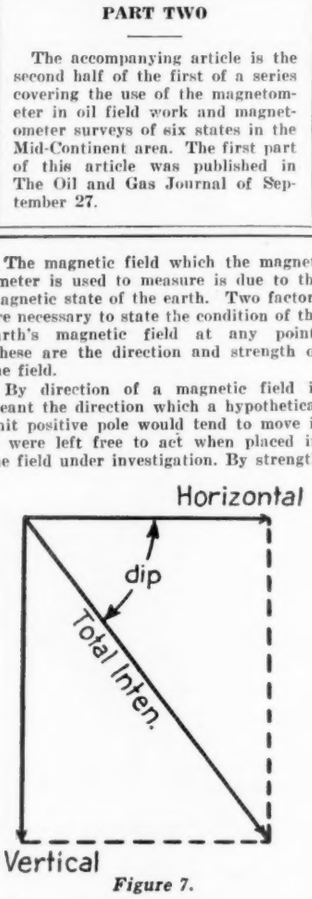


Figure 7.

of the field is meant the force expressed in dynes, that would act on this same unit positive test pole.

That the earth's magnetic field is neither horizontal, vertical nor uniform has been proven and can be partially demonstrated by suspending a long thin unmagnetized bar of steel in a horizontal position by means of a fine thread. After the bar is magnetized it will assume a north and south position and will no longer be horizontal. North of the equator the north end of the bar will dip downward.

For practical purposes the earth's field is generally resolved into two components, one horizontal, and the other vertical. The direction of the horizontal component is defined by giving its angular deflection from some fixed direction usually the geographical meridian. The angle which the horizontal component makes with this geographical meridian is usually referred to as the declination.

If a vertical plane be passed through the horizontal component and the center of the earth then this plane will contain also the vertical component of the field intensity.

The total field intensity will be represented in magnitude and direction by a line joining the ends of the horizontal and vertical component vectors as shown in Figure 7. The angle which this total intensity vector makes with the horizontal is called the dip.

As pointed out in a previous paragraph it is found that north of the equator the north end of a magnetized bar dips downward. Since it is an experimental fact that like poles are repelled and unlike poles are attracted it means that since the north end of the bar dips downward it must be attracted. Therefore the earth's magnetic pole is acting as an actual south pole of a magnet, and the earth's south magnetic pole is acting as an actual north pole of a magnet.

By convention it has been agreed that the lines of force on the outside of a magnet are continuous from the North pole to the South pole, while within the magnet the lines of force are from the South pole to the North pole.

Referring to Figure 8, it is seen that north of the equator the lines of force are downward into the earth, while south of the equator the lines of force are upward. This fact has an important bearing on the adjusting of the magnetometer as the manufacturer must know at what part of the earth the instrument is to be used.

It is also a well known fact that the farther a piece of iron is moved from a magnet the weaker becomes the force exerted on the iron. A similar condition exists in the earth's magnetic field. Thus the farther south one goes from the earth's magnetic pole the weaker becomes the earth's field until the equator is reached, after which the direction of the force reverses and becomes increasingly stronger until the earth's south magnetic pole is reached.

An inspection of the Coast and Geodetic Survey's magnetic intensity map of the United States shown in Figure 9 shows that the vertical magnetic field intensity decreases from a value of .610 gauss on the northern boundary to .320 gauss in southern Mexico. It is therefore also important that the manufacturer know the approximate field intensity in which the magnetometer is to be used so that it can be properly adjusted.

The facts brought out in the last paragraph are made use of in working up a magnetometer survey. It is on the basis of this information that the corrections for latitude and longitude are made. A further discussion of this correction will be taken up later.

Diurnal Range—Daily Variation, Annual and Secular Change

From an inspection of the reports of the Coast and Geodetic Survey showing the records obtained at different government magnetic observatories it is at once evident that the values of the magnetic field intensities undergo small daily

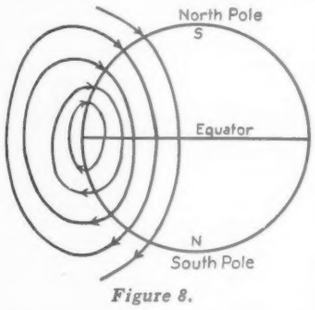
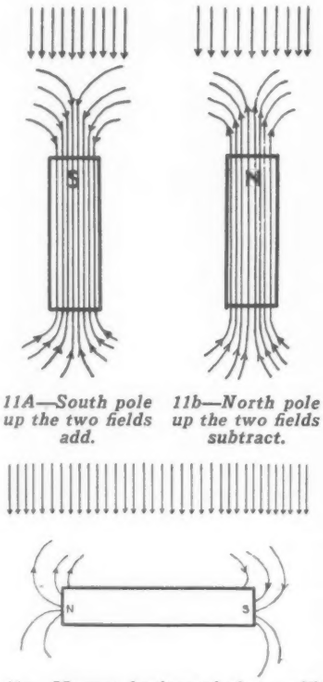


Figure 8.

changes in value. This deviation or variation from a fixed value is referred to as the diurnal range or daily variation.

The magnitude of the diurnal range is different for different places at the same time and is also different for the same place at different seasons. A complete record of these variations can be obtained from the Coast and Geodetic Survey.

The question of diurnal range is a very important one with reference to magnetometer work. It is apparent that if the magnetic intensity is changing constantly then the problem of obtaining relative differences in intensities at two stations



11A—South pole up the two fields add. *11b—North pole up the two fields subtract.*

11c—Magnet horizontal there will be a high over the S pole and a low over the N pole.

Figure 11.

becomes more difficult. Of course it is possible to maintain one instrument at the so-called base station and by means of it record the daily variations, but this adds to the cost of the work and besides it is unfortunately true that even if the expense be neglected, the fact remains that the variation at the base station may be entirely different from the variation at some other station.

Another difficulty presents itself, and that is the fact that it is almost impossible to correlate two instruments so that they record the same daily variation. This is to a great extent due to the differences and inaccuracies in the temperature coefficients which are primarily caused by the temperature lags for two instruments being different.

The possibility and desirability of placing the daily variation instrument in some sort of a subbasement or other almost constant temperature room suggested itself to the writer but unfortunately was never tried out.

The cause of this diurnal range is not definitely known, although many physicists now claim that some sort of a relation exists between these variations in magnetic intensities and the su... H... theory is somewhat substantiated by the appearance of large magnetic storms at periods where the sun spots are most prominent.

The question of the earth currents as a possible cause for the daily variation has also come up, but as yet nothing definitely has been published on this subject.

However, regardless of the cause for this phenomenon, it is important that some means be taken to correct the magnetometer results for this variation. One means of reducing the errors would be to limit the magnetometer work at such periods of the day when it is known that the diurnal range is at a minimum. This is not advisable from an economic standpoint so another method that proved satisfactory was tried out by the writer and will be discussed under the heading corrections.

In addition to the diurnal range, the magnetic elements undergo a periodic change of which the period is a year, which is called the annual range.

There are also slow changes, of which, if they are periodic, the period must be many centuries, and these are called secular changes.

It is interesting to note that during one magnetic storm extreme variations of 100 gamma were observed. It has also been found that the largest daily variation occurs as a rule between the hours of ten in the morning and two in the afternoon. The period of greatest magnetic disturbances usually occur during the hot summer months.

Application of the Magnetometer in Prospecting for Structure

In previous paragraphs it has been pointed out the existence of the earth's magnetic field, its components and normal variation in intensity as the distance from either pole is increased.

The next problem is then to determine just how the magnetometer can be of assistance in adding to the geological information concerning the subsurface structures.

It can be readily demonstrated by simple laboratory experiments that if a piece of iron is placed in a uniform magnetic field there will result a distortion in the original field. The magnetic lines of force will be crowded into the iron, giving rise to a greater field intensity in the vicinity of the iron. It has also been pointed out that whenever any magnetic material is brought in the vicinity of a magnetized bar or compass needle, the bar or compass needle will attract or be attracted by the magnetic material. However, this attractive force rapidly diminishes as the distance between the two is increased.

Suppose, for example, that the earth were made up of a homogeneous material uniform throughout its entire mass. It would then be a comparatively simple

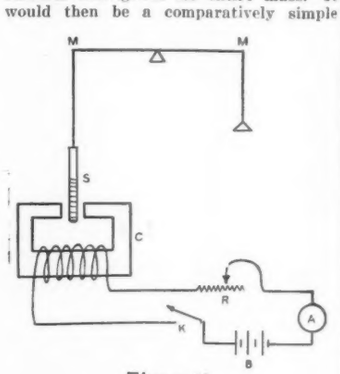


Figure 10.

process to compute the theoretical field intensity at any place on the earth, if the exact location of the place were accurately known with reference to the earth's magnetic poles.

As a matter of fact, however, the earth is not made up of a homogeneous material, neither is it uniform throughout, and it is on the basis of these facts that the magnetometer finds its application.

Suppose, for instance that at some particular place there is a concentration of large quantities of iron ore or other mag-

netic material. As has been just pointed out, the earth's field at this particular place would be distorted from its normal distribution. The lines of force would be concentrated and crowded through this ore deposit. If magnetometer readings are taken as the ore body is crossed, the deflections will increase in the vicinity of the ore deposits, because as shown in the early part of the discussion the deflection of the magnetometer is proportional to the field strength in which the instrument is placed, and the crowding of the lines of force in the vicinity of the ore constitute an increase in field intensity.

It was this principle which led to the use of the "dip needle" for ore prospecting, and as refinements in the instrument were added, it became possible to detect magnetic field distortions of a smaller value.

More Sensitive Than Dip Needle

In prospecting for structure associated with oil accumulation it indeed becomes necessary to use a more sensitive instrument than the old type of "dip needle." For this reason the magnetometer has found such wide use. This problem is quite different from the ore problem, because the prospector is not seeking a highly magnetic material as concentrated iron, but rather he tries to locate the presence of a granite uplift or some other intrusion of igneous rock, or folded sedimentary beds, beneath which, at some depth, are basic rocks.

As a rule, the igneous rocks or granites have a higher magnetic susceptibility than the ordinary sedimentary deposits. (By magnetic susceptibility is meant the ratio of the magnetism induced in a material to the field strength which is being used to magnetize the material. In other words, the magnetic susceptibility of a material is an indication of how magnetic the material is.)

It would seem, therefore, that if an uplift in the granite is present there will be a distortion of the earth's magnetic field in that vicinity, providing of course that the adjacent deposits are not as susceptible, and if a magnetometer survey is made over such an uplift it should show up as a magnetic anomaly.

In actual working conditions the problem is not quite so simple. Results obtained in going over a large number of known fields and structures lead to the conclusion that still another factor enters into the results. This factor is polarization of the structure and will be discussed under interpretation.

In special cases the magnetometer may be used in tracing lenticular sand bodies such as some of the "shoestring" sands in Kansas, for it has been found that these lenticular sands frequently carry magnetite.

The magnetometer also has possibilities along the flanks of granite structures in tracing lenses of arkosic materials, which in some areas are oil or gas bearing.

The Actual Survey—Personnel

The usual magnetometer party consists of a party chief, three magnetometer operators, and one or two surveyors if the area to be investigated has not been surveyed.

The party chief is responsible for the supervision and assignment of the work, the finances of the party, motor equipment, and inspection of the instruments. He works up the field data turned in each day by the men in the party and keeps a contoured map of the work up to date.

It has been found by experience that a combination of three operators and one party chief works out most satisfactorily. Any high school graduate with an aptitude for scientific work and experienced in handling scientific instruments will make a satisfactory magnetometer operator, provided that he is carefully trained and instructed in the work. Of course, where it is possible to obtain some one with one or two years of college work and some knowledge of geology he should be given preference.

Every new operator should be given a general idea of the whole scope of the work and detailed instruction in his particular duties. At the close of each day's field work, each instrument man should be required to work up his data for the day and turn in to the party chief the original field notes together with a copy in ink. It is of utmost importance that the field notes be legible and accurate, with full details included.

The writer's experience has been that one operator to an instrument is sufficient. One large company now doing considerable magnetometer work finds it advisable to have an operator and an assistant to each instrument.

Cars

For the best results it is very necessary that the instrument men be relieved of all unnecessary causes of trouble, the principle one being the car. It is essential that the automobiles used for this type of work be light and capable of standing up under very rough service. There is no place for worn out or patched up cars in a magnetometer party. As a rule, each machine is driven about a hundred miles a day over all sorts of roads and with constant starting and stopping. Delays on account of car breakdowns are very costly and can be avoided by replacing any car which shows excessive repair bills.

Instruments

In addition to the actual number of magnetometers in use, each party should have available for service one spare instrument so that the work can go on uninterrupted in case it becomes necessary to make repairs on one of those in use.

When working in areas where it is necessary to do surveying, it is essential that the party be equipped with surveying instruments and personnel for their operation.

Choice of Methods

There are two possible methods of making a magnetometer survey, the method of traverses and the method of section corners.

If the area to be mapped is located in a region where section corners are well established and the roads are along section lines, then the preliminary work is speeded up by reading at section corners. On the other hand, if the region has not been well surveyed and staked as is typical in West Texas, then the method of traverses will have to be used. In this case the operator chooses the roads or trails as they occur and keeps a record of their courses. Readings are usually taken at intervals of a mile on the basis of speedometer records. It is obvious that the data is useless unless stations

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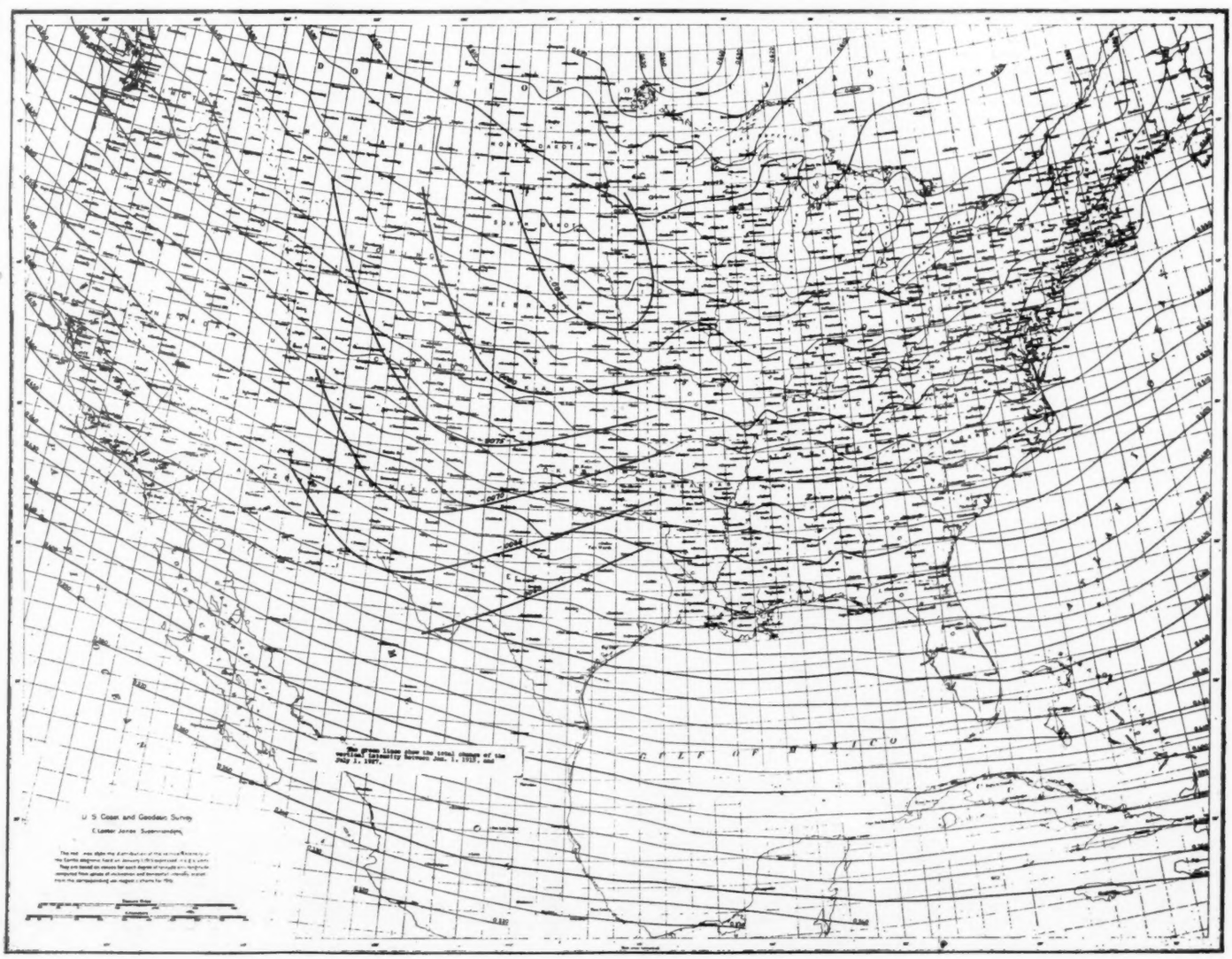

Figure 9.

Methods of Controlling Oil Pressure

Experience Has Shown Deferred Production Is Returned Very Soon and Increased Cumulative Output Is Obtained

By E. H. Griswold* and W. J. Wilkins†

Pressure control of oil wells may be defined as the adjustment of pressures within a well to obtain the most efficient and economic utilization of the natural gas energy with a minimum of sand troubles or irregular water encroachment.

The purpose of this paper is to present the methods used by the writers in applying pressure control and a discussion of the various effects occurring within the wells affected.

The benefits to be derived from the conservation of natural gas energy have been so adequately discussed and demonstrated in prior papers by various engineers that the effects on ultimate production will not be discussed other than to mention a few representative cases. The detrimental effects of irregular edge water encroachment and of sanding up are of general knowledge to the industry.

Effect on Ultimate Production

One of the strongest objections voiced against pressure control is that of the danger or inadvisability of deferring oil production by cutting the rate of production. It has been our experience that such deferred production is returned within a few weeks or months rather than years and that an increased cumulative oil production is obtained in the early life of the well by conserving the natural energy. In many cases the rate of production is increased rather than decreased by the adjustment of pressures to obtain the minimum gas factor.

Figure No. 1 shows the history of a Wilcox sand well in northern Oklahoma, which was pressure controlled from completion. It is noted that during the early months while flowing naturally through the casing that the gas factor was decreased rather than allowed to follow its natural tendency to increase. A string of 2½-inch tubing was run to restrict the flow and resulted in a decreased gas factor with a more sustained rate of production. When first placed on gas lift the gas factor again tended to increase, but after the proper pressure adjustments were made, remained approximately steady. It was necessary to defer 100 bbls. per day of oil production in order to maintain this low gas factor. In March serious sanding up was encountered, but was remedied in April by a method to be discussed later, and a resultant gain in production obtained. The manner in which this well has held up in comparison to offset wells has more than justified the methods used.

Figure No. 2 is an example of a well on which pressure control by use of properly sized flow string gave an increase of 100 bbls. per day in rate of production with a corresponding decrease in gas factor. Subsequent pressure adjustments at the well head in May after the well had declined to 275 bbls. per day resulted in a sustained rate of oil production as shown by the rate-cumulative curve of Figure 3, although scarcely evident on the decline curve of Figure No. 2.

Co-operation of offset well owners is beneficial but not always necessary for the use of pressure control even when production is deferred. An interesting test of this was made on two offsetting Wilcox sand wells. Well "X" was completed with an initial of 1,300 bbls. and well "Y" with an initial of 700 bbls. Both wells had the same thickness of sand but well "X" was somewhat better located structurally. Well "X" was produced at its maximum rate without regard to gas factor, while well "Y" was pressure controlled by deferring production to maintain the minimum gas factor. At the end of approximately one year well "Y" had a larger cumulative production than well "X" despite the great difference in initial and flush production.

There are undoubtedly areas in which sand conditions are such that economic considerations will not permit deferring production unless operators co-operate, but in all instances the operator will be repaid for testing his wells to determine the point of minimum gas factor obtainable at the rate of production deemed necessary to prevent loss by drainage.

There has been some doubt expressed as to the relation of the minimum gas factor to the most economical gas factor from the viewpoint of ultimate profit. In some instances it is possible to produe a well at such a low rate that the producing life and operating cost may be increased to where they would offset the gain in ultimate production. However, in the great majority of cases, the point of minimum gas factor so closely coincides with the most economical gas factor, that the distinction cannot be made within the accuracy of the governing elements.

Application of Control

In applying pressure control to either naturally flowing wells or gas-lift wells the major adjustment is that of proper size and depth of flow tubing. The minor adjustments are made by variation of input gas on gas-lift wells and by back pressure at the flow line on both types of wells.

It has been found that surface flow line design and separator location have a marked influence on the results obtainable, especially when high back pressures are used. The stratification of oil and gas in the flow line with attendant slippage can cause excessive gas factors and thus waste either natural or supplied energy and in some cases both. A properly designed flow line is one in which all bends are convex upward. In one case a change in flow line curvature from upward concavity to upward convexity gave an increase of 20 per cent in fluid lifted with a corresponding decrease in gas factor as gas volumes remained constant. In another case a change in location and elevation of a separator gave a 21 per cent increase in oil production without change of gas volumes.

The use of adjustable needle valve flow beans is preferred to high back pressures on separators, as flow line slippage can be overcome by the expansion of gas after passing through the bean. The bean should be placed close to the well head

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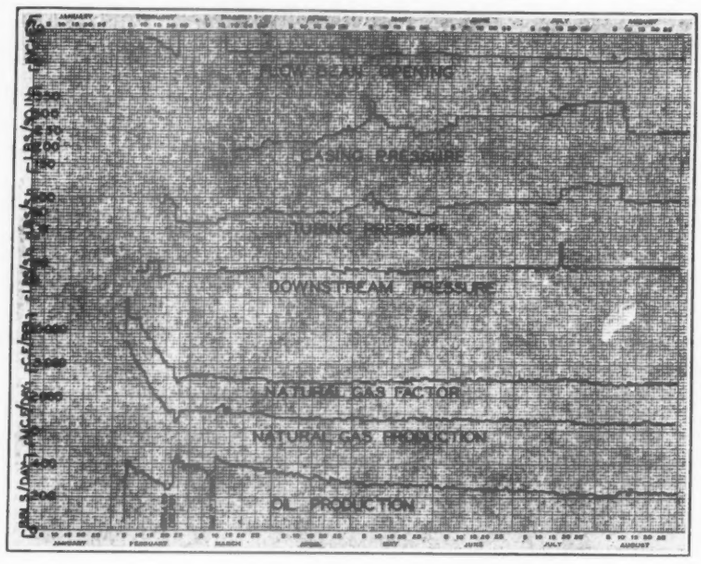

Figure 2.

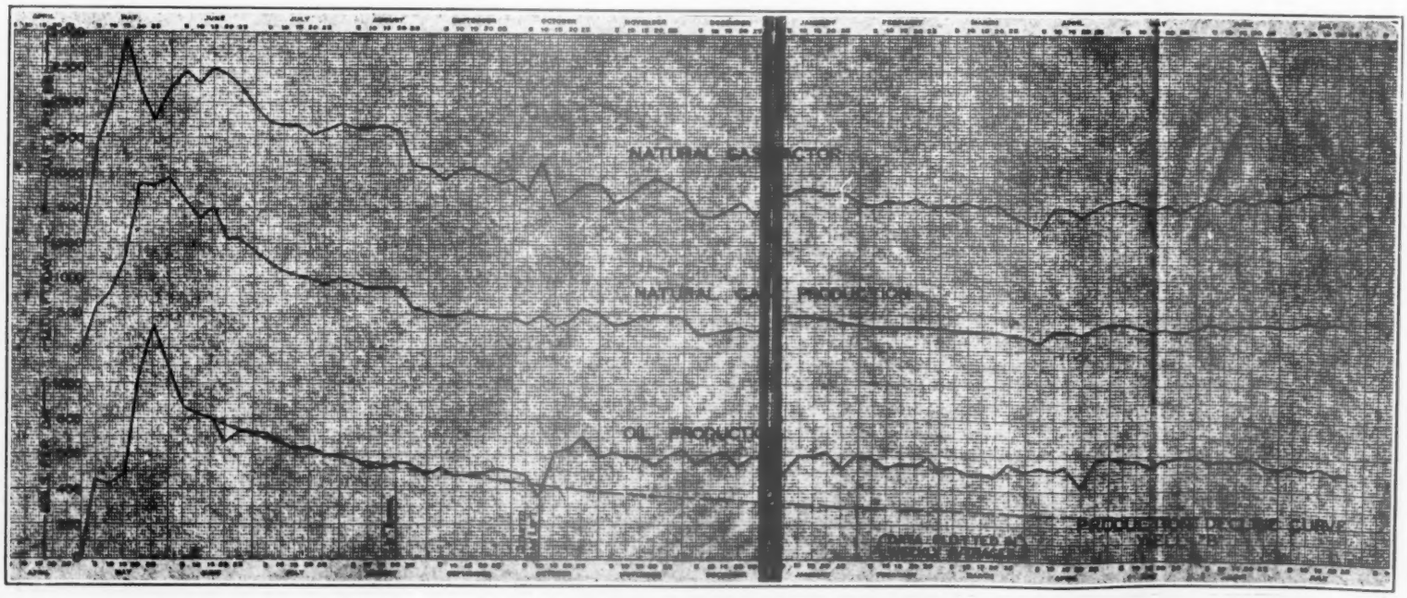

Figure 1.

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*Petroleum engineer, Marland Production Co. †Assistant petroleum engineer, Marland Production Co.

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CHEAPENING GASOLINE

The refining industry, casting up the records of the main gasoline consuming season for 1928, in the main satisfactory, is now engaged in making plans for the coming year.

An even larger consumption is to be expected in 1929, because each year has shown an increase in demand, but more particularly because there has been a record production of automobiles this year with every indication that next year will show another as the Ford company reaches maximum production.

But this greater market should be considered least in the making of plans by the refining industry for 1929. However large the demand may be there will be no difficulty in supplying it.

There is not the slightest necessity for accumulating any large increase in stocks to meet it. On the other hand, there is the warning of experience against doing anything of the kind.

This is the thought that should be kept foremost in the refining industry's planning for next year.

Before sitting down to figure on operations during the winter let each refiner ask and answer the question what made the season of 1928 as satisfactory as it was.

It has already been stated that the most important phase was the prevention of large accumulations of gasoline during last winter Next was well-regulated operations which kept supply in line with demand throughout the season.

But the check on winter operations was the basis. Without that foundation it would have been impossible to have attained the results desired. Miscalculation on the winter program would have made the year as unprofitable as the other years when there was a reckless rush to accumulate stocks during the winter far in excess of any conceivable demand during the summer season.

It took those profitless years to teach the refining industry that it was a mistaken policy for refiners to disregard the limits of the potential market for their product.

The gasoline market, from one year to another, can be estimated with almost mathematical exactness. The fluctuation will be found an infinitesimal fraction of the total consumption.

Just about so much gasoline will be sold and whatever is made more than required to supply that demand will be to that extent a depressing factor in the market.

This has been one of the hardest lessons for the oil industry, in all its branches, to learn.

Perhaps its difficulty has been deep rooted. Years ago, before the petroleum industry became one of the great businesses of the world, it could be understood that a man who "struck oil" might take it as "a gift of the gods" and be interested chiefly in turning it into money as quickly as possible. Whatever he got he considered gain.

Until a few years ago there were many in the oil industry who seemed to act on the same idea. They were so eager to turn their oil or their gasoline into money that they disregarded the important question whether they were losing more than they obtained.

It took repeated disastrous seasons to convince them that the gasoline business was like any other business where surplus production forces down price below profit. Just as many overproduced, hoping to sell more than their fellows, unmindful that others were doing the same, many hesitated to keep down their output, foolishly expecting somebody else to do it.

It was not until they realized that what hurt the industry in general hurt them that progress was made towards intelligent operations in line with estimated demand.

The producing branch has been through the same mill. When it was conducted on the every-man-for-himself basis overproduction followed overproduction and price decline hit them all.

Just as the refining branch has seen a satisfactory season result from operations based on the good of the industry rather than a scramble for individual gain the producers have found co-operation in production their sole protection against greater losses.

Oil is no longer regarded as something found and therefore undervalued, but as a commodity hard won and to be sold only for what it is worth to the producer and to the consumer as well.

So today we find producers and refiners increasingly cautious in their operations against overproduction which will reduce values.

In fact, this realization has become so general throughout the industry the world over that it has led to a world conference on stabilization at something approaching intrinsic values.

The conservation movement has led to a new appreciation of the worth of petroleum and petroleum products, by both the industry and the general public.

The industry should be careful to do nothing that will cheapen that valuation as would follow overproduction of crude or gasoline.

Whether the industry will obtain a fair price for its products, crude or refined, will depend upon the industry itself.

Just a few years ago refiners were making gasoline on a margin of three or four cents. Conditions have changed and the refiner is operating on a margin of a fraction of a cent. Competition has become so keen and profit so dependent upon efficiency in management that it behooves the entire industry to see that a strong gasoline market is maintained at all times.

Overproduction of gasoline this winter will mean a return to "distress" gasoline next summer. Operations as conservative as last winter, making necessary allowance for normal increase, and followed by keeping production carefully in line with demand throughout 1929, will assure another satisfactory year.

Co-operation among producers in every field where there is danger of overproduction is keeping the crude market steady. Like resolution on the part of the refiners in holding their winter operations within a reasonable margin will assure them another good season next summer.

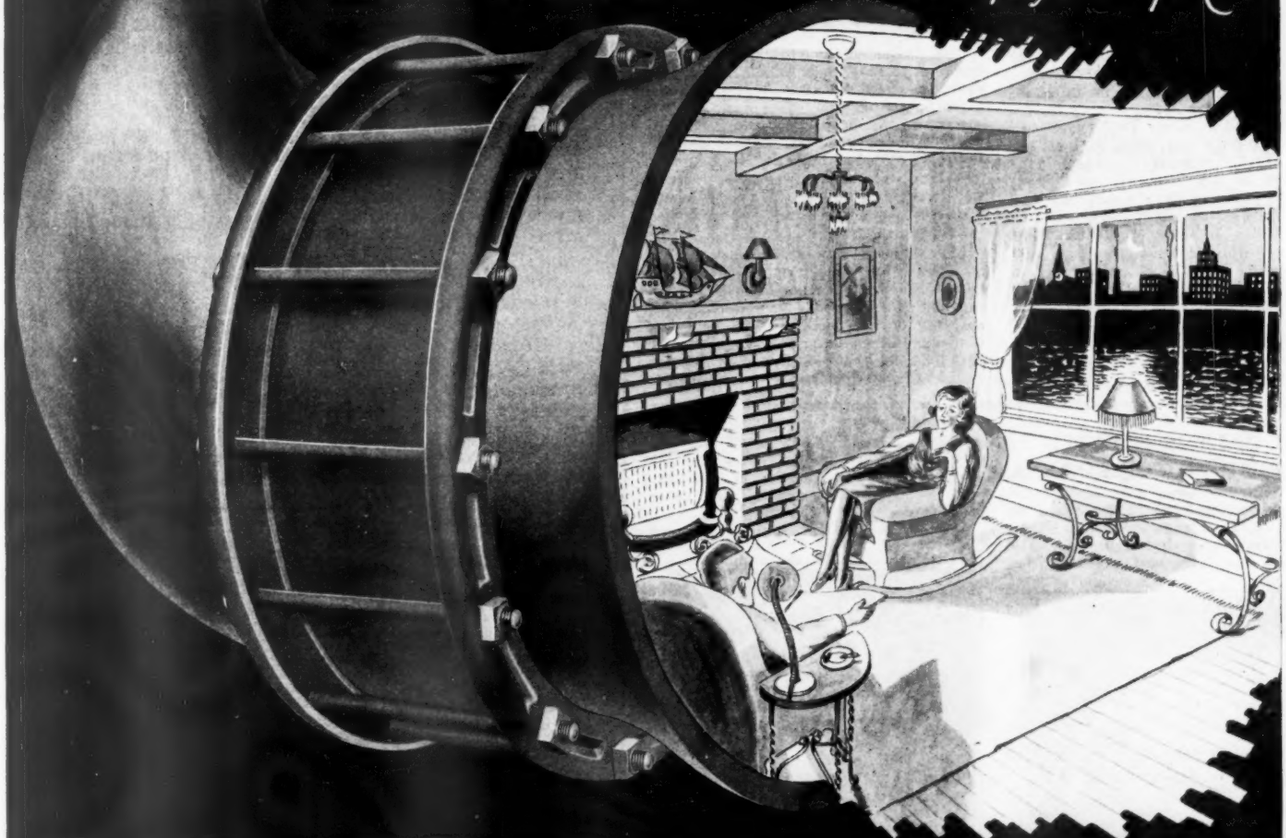
Cause and effect has been so often demonstrated in the contrary and corroborated by the results of the new policy last winter that it should be plain to every one in the refining business.

The market for gasoline in the main consuming season of 1929 will be made by refinery operations this winter, not by the number of cars on the road next year.

It is calculated that the current year will see a new record of 390,000,000 barrels of gasoline manufactured and dispensed. A normal increase of 40,000,000 next year would make the 1929 total 430,000,000 barrels. But if the manufacturers produce 450,000,000 or 500,000,000 barrels every excess barrel will cheapen that much every barrel sold.

DRESSER

"The Factor that Insures Service with Safety & Comfort."



COUPLINGS

Dominate!

S. R. DRESSER MFG. COMPANY -- BRADFORD, PENNA.

TOTAL DECREASE IN STOCKS OF OIL DURING AUGUST 2,458,000 BARRELS

WASHINGTON, D. C., Oct. 2.—According to reports received by the Bureau of Mines, Department of Commerce, from companies which operate gathering or lead lines, the production of crude petroleum in the United States during August, 1928, amounted to 77,829,00 bbls. This represents a daily average of 2,511,000 bbls., an increase over July of 78,000 bbls. per day. The major portion of this material increase resulted from increased output in Oklahoma or, more specifically, from flush production in the Little River (Seminole) and St. Louis Pools of that State.

The daily total initial production of the August completions in West Texas established a new record of over 1,000,000 bbls. but these wells were practically all pinched in and the production of the district was unchanged from July.

The daily average output in California in August was 10,000 bbls. below that for July, due largely to a decline in activity at Long Beach and to a centering of attention toward reaching the newly discovered deep sand at Santa Fe Springs.

Stocks of crude petroleum in the Mid-Continent area increased in August, due to the rise in output at Seminole. However, this was more than counterbalanced by withdrawals in other areas with the result that a decrease of 600,000 bbls. was recorded in total crude stocks east of California. Stocks of light crude in California increased slightly but stocks of heavy crude and fuel oil declined over 600,000 bbls. Total stocks of all oils decreased 2,458,000 bbls. in August, the largest decline in these stocks since September, 1926.

Runs to stills of crude petroleum again attained record figures in August, 1928, when the daily average throughput was 2,632,000 bbls. This represents an increase over August, 1927, of 343,000 bbls., or 15 per cent.

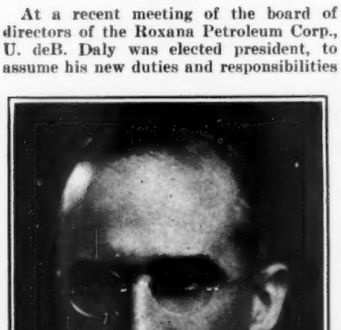
Gasoline production also reached a new high level in August, when the daily average output was 1,098,000 bbls., or 22 per cent above that of August, 1927. The daily average domestic demand continued to rise and in August amounted to 1,069,000 bbls., or 11 per cent above the corresponding period in 1927. Exports of gasoline fell off but stocks were reduced over 3,000,000 bbls., and on August 31 amounted to 27,197,000 bbls. At the current rate of total demand, these stocks represent the unusually low figure of 22 for days' supply, as compared with 25 days' supply on hand a month ago and 31 days' supply on hand a year ago.

The indicated domestic demand for kerosene was higher in August, but stocks again increased due to a greater increase in output. Slight increases were also recorded in the production and consumption of lubricants. Stocks of fuel oil continued to rise, but the increase was less than for July. The production of wax was high but an unusually heavy domestic demand resulted in a further lowering of stocks.

The refinery data of this report were compiled from schedules of 334 refineries, with an aggregate daily crude oil capacity of 3,186,000 bbls. The refineries operated during August at 83 per cent of their recorded capacity, as compared with 334 refineries operating at 82 per cent of the recorded capacity in July.

U. deB. DALY IS ELECTED PRESIDENT OF ROXANA

At a recent meeting of the board of directors of the Roxana Petroleum Corp., U. deB. Daly was elected president, to assume his new duties and responsibilities on October 1. He succeeds F. Godber, who has held this position for the past nine years.

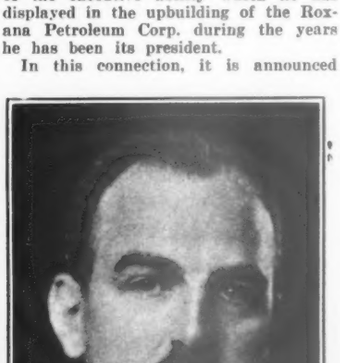


U. deB. Daly

Mr. Daly has long been associated with the Shell organization and in recent years has been successively assistant to Mr. Godber and vice president of the Roxana Petroleum Corp.

Mr. Godber has been elected to the directorate of the Shell Transport & Trading Co., and will shortly leave St. Louis with his family to take up his new post in London. In his capacity as one of the active directors of the Shell Transport & Trading Co., Mr. Godber will have a broader field for the exercise of the executive ability which he has displayed in the upbuilding of the Roxana Petroleum Corp. during the years he has been its president.

In this connection, it is announced that Mr. Godber will remain a director in the Shell Union Oil Corp. of New York City, thus retaining his contact with Shell activities in this country.



F. Godber

WORLD'S DEEPEST 10-INCH WELL

TITUSVILLE, Pa., Sept. 29.—Three years to the day after the test well of the United Natural Gas Co. was spudded at Kane, a depth of 7,907 feet was reached making it the deepest 10-inch well in the world. No gas strike has been made as yet but as the well was started originally for scientific purposes it is believed the drilling will continue until trouble develops.

HIGH SPOTS IN FIELD NEWS

OKLAHOMA

Seminole production was 335,528 bbls. Tuesday. Intrusion of water at St. Louis, especially on edge wells, more noticeable.

Umpire Collins has issued notice that, effective October 4, potential output in Greater Seminole, St. Louis, Allen and Lovell Fields will be reduced 10 per cent.

Producers violating State Commission's order will be cited for contempt and an injunction asked in state courts.

Mission Pool operators will meet in Tulsa Tuesday, October 9, to consider proposal that pool be conservatively drilled, wells to be started November 15 and completed March 15.

CALIFORNIA

The Shell Co.'s No. 12 Slusher has extended the deep Buckbee zone at Santa Fe Springs 1,800 feet west of the discovery well. It blew in flowing 1,500 bbls. of 35.8 gravity oil with 1,300,000 feet of gas from 14 feet in the sand. It is estimated as good for 5,000 bbls.

NORTH LOUISIANA

Magnolia Co.'s Spring Hill, Webster Parish, well is pumping 200 bbls. a day of 27.4 oil, and one per cent water and two per cent sediment. Deeper production is a possibility.

Palmer Corp.'s well, 3 miles south of Cotton Valley Trinity production, made 37,084,000 feet of gas with no show of oil or water.

NEW MEXICO

Getty Oil Corp. well in Eddy County makes 430 bbls. best completion in long time.

GULF COAST

Humble Co. gets good producer on De Walt Dome. Rycade Corp. brings in third producer at Bayou Bouillon. Approximately 11,000 bbls. of new production added to coastal fields, largest in months.

NORTH TEXAS AND PANHANDLE

First producer in Haskell County.

New pool opened in Wichita Falls district.

New rules adopted for conserving gas in the Panhandle. Regulations on rotary work.

Late News from the Field

CALIFORNIA

LOS ANGELES, Calif., Oct. 2.—The Shell Corp.'s No. 12 Slusher extended the areal limits of the deep Buckbee zone at Santa Fe Springs approximately 1,800 feet west of the discovery well when it blew in flowing 1,500 bbls. of exceptionally clean 35.8 gravity oil and 1,300,000 feet of wet gas daily. This well was carried down to 5,758 feet and a 5¾-inch water string landed at 5,744 feet. It blew in prematurely Sunday afternoon while a water test was being made and consequently is producing from only 14 feet of hole. Preparations are being made to resume drilling and with additional hole the outlook is good for at least 5,000 bbls. daily.

The showing of this well is especially significant because it is located within a few hundred feet of the Shell's No. 6-A Slusher which failed to encounter the deep Buckbee zone notwithstanding the fact that it was carried down to 6,113 feet before abandonment a few years ago. No. 12 Slusher has definitely proved up the Buckbee zone as a prolific sand and will undoubtedly result in the immediate starting of numerous new wells.

George Getty's big gas well is still out of control and burning quite vigorously. The tunnel being dug to intercept the pipe in this gas well 50 feet below the surface is nearing completion, but it will be several days more before the gasser can be brought under control.

OKLAHOMA

With the continued wide open flow of the flush areas of Oklahoma, the production of the important fields was kept at a high rate. The Greater Seminole area produced 335,528 bbls. for the 24 hours ending Tuesday at 7 a. m., divided as follows:

	Bbls.
Little River	138,433
Maud	54
Mission	357
Bowlegs	53,530
Earlsboro	85,000
Seminole	46,512
Searight	11,642
Total	*335,528

*From 1,239 wells.

The St. Louis area produced 118,939 bbls. from 162 wells on the same morning.

In a letter which was mailed out to all oil producers in the Greater Seminole, St. Louis, Allen and Lovell Fields of Oklahoma, Umpire Ray M. Collins stated that effective Thursday, October 4, the potential output of all oil leases in these fields will be reduced 10 per cent.

The letter also announces that some of the operators have not taken the proper steps towards proration, and that the Oklahoma Corporation Commission's order regarding this issue will be vigorously enforced, and that any producers violating the order will be cited for contempt before the commission, and an injunction asking for a receiver for the offending property will be sought in the State courts.

A meeting of operators interested in the Mission Pool in Township 8-6 will be held in Tulsa on Tuesday, October 9. It is now proposed that the Mission Pool be conservatively drilled, the wells to be started November 15 and completed March 15, allowing four months for drilling time. This plan is reported as

(Continued on Page 121)

New Pool in Wichita Falls District

Substantial Gain in Panhandle Production. Hearing on Restriction of Rotary Work. New Rules to Conserve Gas Issued

By James H. Dameron
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Oct. 1.—A new pool in the Wichita Falls district, completions in the same area and a substantial gain in Panhandle production were among the most noteworthy of North Texas developments during the week.

Wichita Falls district's new pool is being opened by Bridwell and Heydrick's No. 1 Burnett in the northwest part of Section 3, H.&T.B. Survey, Wichita County. In its present incomplete stage it is estimated to be good for between 40 and 50 bbls. daily.

The well had sand at 1,915-20 feet and oil rose in the hole at the rate of 100 feet per hour. The operators plan to drill 1 foot deeper before putting the well on the pump. It is a few hundred feet northwest of the north part of the Burnett reservoir. Production from four other pools near by surround the new well in all four directions within a radius ranging from a half to three-quarters of a mile. The other pools have been defined.

While the Wichita Falls district registered a gain in daily average production to push it over 100,000 bbls. daily, the main flush area, southeastern Wilbarger County, virtually marked time. Production of the Greyback Pool was down and the other two flush spots in that county were pushed to keep the county's production to around 32,000 bbls. daily.

May Open More Territory

Midway between the Rock Crossing Pool and the Greyback Pool, Jim McKanna's No. 2-B Waggoner, 660 feet from the north line and 200 feet from the west line of the SE half of the SW, Section 32, Block 4, H.&T.C. Survey, is being followed with keen interest. The well swabbed 425 bbls. in one day from sand at 2,304-25 feet.

This sand correlates with the upper pay in the Greyback Pool and the most prolific pay in Greyback lies approximately 100 feet below the upper pay. It is reported the owners will drill deeper. Deepening of this well will be followed closely and it is expected to open up considerable more territory for drilling.

Approximately 3,300 bbls. of flush production was brought in last week in Wilbarger County. The bulk of this came from the Greyback Pool. Fain and McGaha Corp.'s No. 13-S Waggoner was the banner completion in the district. That Greyback Pool well made 900 bbls. initially from sand at 2,365 to 2,415 feet. The Texas Company completed a 753-bbl. well in its No. 13 Waggoner-E in the same pool, and Waggoner Refining Co. finished a 500-bbl. well with No. 10-H.

Leading the list of Consolidated Pool completions was Baker and associates' No. 5 Waggoner-B which made 315 bbls. from sand at 1,874-86 feet. A couple other small wells were completed in the same pool.

Northeastern Young County is probably the most active area in the Wichita Falls district. New shallow production, found between 500 and 700 feet, gave that county a good increase in production and the recent discoveries have renewed the campaign to discover more of it. Almost a year ago a spudder drilling campaign opened in that section of the county close on the heels of the discovery of a prolific shallow discovery.

Clay County Completions

Clay County reported an unusual number of completions last week as the result of four post hole wells being completed in addition to a brace of dry holes at shallow depths. Bain and Clark completed two wells in the 660-foot sand and two more in the 190-foot sand.

Despite the gains in other counties of the district Wichita Falls' daily average production increased only 295 bbls. This gain sent the total daily average over 100,000 bbls. daily. This figure will likely stand for a few weeks.

Panhandle made the best gain in production with a 2,745-bbl. increase. Most of this gain came as a result of several wells on various leases in Hutchinson County being cleaned out, while the remainder came from Gray County flush production and the increase in Moore County.

Through an error Danciger and McElroy's No. 1 Falkner, in the LeFors area of Gray County, was reported as a 400-bbl.-per-hour well last week. This well made only 4 bbls. per hour after a 280-quart shot.

Restricting Rotary Work

Development in the LeFors area continues to increase and last week the Texas Railroad Commission issued an order restricting the use of rotary tools in that area to an extent. The commission had been advised that rotary drilling water was damaging the pays. A hearing was held before R. D. Parker, chief supervisor of the commission's oil and gas division.

Wells may be drilled with rotary to the pay zone but must be completed with standard tools. At the same meeting Mr. Parker took other measures to curb waste of gas in the entire Panhandle area. Gas encountered above the oil pay zones must be controlled and conserved, according to the new rule issued to that effect. It has been estimated that around 5 per cent of the recoverable gas in the Panhandle area has been wasted.

Ranger district remained in a slump for another week with no sensational wells being completed. Field work in that territory continues its gradual decrease.

Production of North Texas as a whole climbed to 208,597 bbls. as a result of a net gain of 892 bbls. Ranger showed a big drop when it declined 2,148 bbls.

ESTIMATED DAILY AVERAGE PRODUCTION NORTH TEXAS
Week ended September 29

Panhandle district—	Production
Carson County	6,215
Gray County	23,070
Hutchinson County	32,935
Moore County	1,720
Potter County	20
Wheeler County	730
Total this week	64,690
Total last week	61,945
Increase	2,745
Wichita Falls district—	
Archer County	19,653
Baylor County	90
Clay County	480
Cooke County	2,460
Jack County	1,477
Montague County	8,340
Throckmorton County	808
Wilbarger County	32,099
Young County	8,227
Wichita County	26,439
Total this week	100,073
Total last week	99,778
Increase	295
Ranger district—	
Brown County	11,646
Callahan County	3,555
Coleman County	3,617
Comanche County	1,265
Palo Pinto County	410
Ranger	5,336
Shackelford County	10,913
Stephens County	7,092
Total this week	43,834
Total last week	45,982
Decrease	2,148
Grand total this week	208,597
Grand total last week	207,705
Increase	892

PANHANDLE COMPLETIONS
Week Ended September 29

Carson County

Anderson and others' No. 1 E. Turney, C NE Section 50, Block 2, I.&G.N.R.R. Survey, encountered a hole full of water at 3,632 feet and was dry and abandoned at 3,632 feet. E. A. Ross' No. 1 C. C. Barnard, NW cor. SE SW Section 24, Block 24, I.&G.N. Survey, had 300 feet of oil in hole at 3,368-70 feet and was dry and abandoned at 3,625 feet.

Gray County

Empire Gas & Fuel Co.'s No. 1 Hexler, 990 feet each way from NW cor. Section 215, Blk. B-2, H.&G.N.R.R. Survey, made 11,000,000 feet of gas at 2,495-2,775 feet and was drilled to a total depth of 3,356 feet. Gulf Production Co.'s No. 1 Thut, 250 feet north and east of most northerly SW cor. of 160-acre tract, G. Zweig Survey, flowed 75 bbls. at 2,847 feet.

Hutchinson County

Phillips Petroleum Corp.'s No. 7 Johnson Brothers (Dorsell), 559 feet north, 745 feet east of SW cor. of north 160 acres of Section 64, Block 46, H.&T.C. R.R. Survey, made 100 bbls. after having been shot with 2,682-2,725 feet.

Motley County

Exploration Co.'s No. 4 Matador was shut down at 4,015 feet.

Wheeler County

Magnolia Petroleum Co.'s No. 1 H. Reeves, Section 79, Block 17, made 386,000 feet of gas at 2,272-86 feet, 415 pounds rock pressure.

WICHITA DISTRICT

Archer County

Brown & Hickey's No. 1 Wallace made 17½ bbls. at 1,015-24 feet. Golding, Cochran & Hines' No. 1 Hayter was dry and abandoned at 1,552 feet. Burns & Long's No. 1 Carnesek was dry and abandoned at 1,442 feet. Madden & Hunt's No. 3 Richardson made 80 bbls. at 1,296-1,309 feet. O. C. Reed and others' No. 1 Ickert was dry and abandoned at 1,255 feet. The Texas Company's No. 5 Hayter was dry and abandoned at 1,422 feet. Wichita Production Co. and others' No. 1 Richardson-B was dry and abandoned at 1,402 feet.

Clay County

Bain & Clark's No. 1 B. Landrum made 17 bbls. at 660-64 feet. Their No. 2 B. Landrum made 10 bbls. at 660-64 feet. Their No. 3 B. Landrum was dry and abandoned at 690 feet. Their No. 4 B. Landrum was junked at 674 feet. Their No. 5 B. Landrum made 3 bbls. at 190-95 feet. Their No. 6 B. Landrum made 3 bbls. at 190-95 feet.

Cooke County

W. B. Fisher and others' No. 1 Jones was dry and abandoned at 1,600 feet.

Jack County

Prairie Oil & Gas Co.'s No. 1 Brown was dry and abandoned at 3,515 feet.

Montague County

Bridwell Oil Co.'s No. 5 Salmon-D was drilled to a total depth of 984, plugged back to 937 feet and made 8 bbls.

Throckmorton County

Credicott & Baker's No. 1 Downing was dry and abandoned at 715 feet. Holder's No. 1 Walker was dry and abandoned at 805 feet.

Wilbarger County

The Texas Company's No. 13 Waggoner-E made 753 bbls. at 2,360-92 feet. Tower & McKanna's No. 2 Waggoner-B made 390 bbls. at 2,304-25 feet. Waggoner Refining Co.'s No. 10 Waggoner-H made 497 bbls. at 2,275-85 feet at 2,410-30 feet. Baker and others' No. 5 Waggoner-B made 315 bbls. at 1,874-86 feet. Barkley & Meadows' No. 5 Waggoner-C made 78 bbls. at 1,867-88 feet. Consolidated Oil Co.'s No. 12 Waggoner-A made 35 bbls. at 1,859-80 feet. Fain-McGaha's No. 13 Waggoner-S made 900 bbls. at 2,365-2,415 feet. Their No. 1 Waggoner-W made 35 bbls. at 1,830-38 feet. Golding Cochran and others' No. 1 Waggoner-H was dry and abandoned at 2,601 feet. Hamilton & Martin's No. 5

(Continued on Page 135)

TEXAS PANHANDLE WILDCATS

Week Ending September 29

CARSON COUNTY

Company, Well, Farm, Name, Section and Block—	Remarks—
Beaudain et als' No. 1 Barnard, 330 ft. from N and E of E 80 acres, SE, Sec. 24, Blk. 4, I.&G.N. Sur.	Rig.
Denson et als' No. 1 W. E. Cobb, 930 ft. from N line, 280 ft. from E line, W half NW, Sec. 184, Blk. 2, I.&G.N. Sur.	S.D. 725 ft.
Empire G. & F. Co.'s No. 1 D. Pope, 990 ft. from S and E lines, Sec. 242, Blk. 2, H.&G.N. Sur.	Drlg. 2,215 ft.
Empire G. & F. Co.'s No. 1 J. J. Crutchfield, 1,320 ft from S and W lines, Sec. 28, Blk. 4, I.&G.N. Sur.	Fish. 910 ft.
Morris et als' No. 1 Barnard, NW cor. SW SE, Sec. 44	S.D. 400 ft.
Navajo Oil Co.'s No. 2 Poling, 660 ft. from W and 330 ft. from N lines, N 30 acres SW, Sec. 22, Blk. X-2, T.T.R.R. Sur.	S.D. 800 ft.
Spartan Oil Co.'s No. 1 S. Bednorz, NW cor. E ½ NW, Sec. 202, Blk. 3, I.&G.N. Sur.	Rig.
Stubblefield et als' No. 1 Cooper, 340 ft. N and 330 ft. W line SE, Sec. 5, Blk. 9	Spud.
Travis et als' No. 1 D. A. Harrell, C NE NE, Sec. 162, Blk. 7, I.&G.N. Sur.	H.F.W. 1,250 ft; U.R. 12-in. csg.

CASTRO COUNTY

Colorado O. & R. Co.'s No. 1 M. Siemmons, SW cor. Sec. 73, Blk. M-17, B.S.&F. Sur.	Rig blown down.
Mysterv Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S.K.&K. Sur.	S.D. 510 ft. for csg.

CHILDRESS COUNTY

C. L. Sloane et al's No. 1 B. P. Smith, Sur. 49, F. P. Knott lands	S.D. 4,005 ft.
The Texas Co.'s No. 1 Smith, 100 ft. each way from NW cor. Sec. 174, Blk. H, W.&N.W. Sur.	S.D. 3,500 ft; wtr. encountered.

COCHRAN COUNTY

Clark & Melat's No. 1 C. C. Slaughter, 1,650 ft. E and 660 ft. S of NW tract, League 118, Knox County School land	Rotary derrick.
Marland Prod. Co.'s No. 1 C. C. Slaughter, 330 ft. from S and W lines, Carson County School land, Tract 130	Drlg. 1,355 ft.

COTTLE COUNTY

Explta. Co.'s No. 1 Richards	Spudded and S.D
Explta. Co.'s No. 4 Matador Land & Cattle Co., C, Sec. 46, J. H. Stephens Sur.	Spud.
Skelly Oil Co.'s No. 1 J. H. Cannon	S.D. 3,480 ft.
Sun Oil Co.'s No. 1 T. B. Yarborough, 485 ft. S and 2,460 ft. E of NW cor. Sec. 551, Blk. H, W.&N.W. Sur.	Drlg. 1,790 ft.

FLOYD COUNTY

Explta. Co.'s No. 1 S. H. Boone, C. C. H. Johnson Sur.	S.D. 4,015 ft.

GRAY COUNTY

Arnold & Howell's No. 1 Turnex, C SW, Sec. 111, Blk. B-2	S.D. 2,224 ft. for pipe.
Barker & Wetzel's No. 1 J. S. Morse, 330 ft. NE of SW cor. N ½ SW, Sec. 66, Blk. 25, H.&G.N. Sur.	Shot with 125 qts. 2,900-3,012 ft; to shoot again.
Biggs et als' No. 1 Morse, SW cor. Sec. 3, Blk. 26, H. &G.N. Sur.	10,000,000 ft. gas 2,192-2,250 ft; S.D. 2,590 ft.

(Continued on Page 63)

Think Hendricks Has Passed Zenith

Potential Production Falls Below September Peak. Allowed Runs Reduced to 150,000 Bbls. Daily. Proration Extended Six Months

By James H. Dameron
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Oct. 1.—Proration figures for the Hendricks Pool in Winkler County for the period October 1 to 15, inclusive, indicate to many students of that field that Hendricks has passed its zenith in potential production.

Potential production of the pool fell 9,411 bbls. below its peak of 2,505,902 bbls. which was registered during the gauges taken in the middle of September.

At the same time the Texas Railroad Commission signed an order reducing the allowed runs of Hendricks from 175,000 bbls. daily to 150,000 bbls. daily. The order went into effect at 7 a. m., October 1. The commission also extended the proration order for Winkler County another six months from November 5, 1928.

Winkler's peak in potential production is 2,505,902 bbls. from 350 wells on 161 units. New gauges show the county to have a potential production of 2,496,491 bbls. from 363 wells on 168 units. During the past 15 days the number of wells increased 13 and seven new units were added to production. Including the 13 new wells added during the last half of September 76 wells were tested by the umpire and his aides. The remaining wells were discounted a small per cent in most instances and some of the wells held their former potential production.

The decrease in potential production may be wiped away by the time wells are gauged for new proration purposes and the present drop is not important so far as actual production is concerned. However, the decrease in potential makes the menacing water situation loom greater. At the end of the week there were 216 wells in the Hendricks area making water in various percentages.

Field Committee Functioning

The Field Committee comprised of a representative of each company operating in the field has started functioning. This committee was organized to suggest methods of controlling the water intrusion. Cutting the allowable production 25,000 bbls. is expected to be a great aid in arresting water encroachment because of the increased back pressure applied to wells in the north end of the pool.

Reducing runs of the field was felt by every operator in Hendricks. Southern Crude Oil Purchasing Co. still leads in allowed production.

Below is a comparative table of potential and allowed production for the periods September 16 to 30, and October 1 to 15, both dates inclusive, showing the drop in potential production by companies as well as showing the reduction of runs as a result of cutting the field's allowable production to 150,000 bbls. daily by the Texas Railroad Commission. Prior to October 1, Winkler had an allowed production of 175,000 bbls. daily.

Company—	No. wells	No. units	Present potential	Former potential	Present allowance	Former al'w'nce
Amerada Pet. Corp.	1	1	3,466	3,648	550	670
Atlantic O. P. Co.	25	12	127,042	121,610	9,168	11,306
Atlantic and Collett	12	4	196,126	229,013	7,676	10,170
Atlantic, Kessler & Logan	1	1	3,362		101	
California Co.	5	2	19,251	18,123	1,470	1,719
Cranfill & Reynolds	7	2½	78,219	83,160	3,300	4,059
Eastland Oil Co., et al	1	¾	333	408	345	422
Gulf Prod. Co.	25	12	296,060	281,987	14,246	15,819
Humble O. & R. Co.	32	14	116,034	93,764	9,729	10,874
Independent O. & G. Co.	16	7½	64,349	65,808	5,298	6,371
Magnolia Pet. Co.	8	2	1,142	1,280	926	1,131
Marland Oil Co.	6	3	39,532	41,706	2,526	3,087
Murch'son & Cranfill	7	2½	15,560	16,490	1,472	1,798
Murchison and T. P. Lee	1	½	11,503	12,108	569	695
Prairie Oil & Gas Co.	5	2	85,834	90,352	3,470	4,241
Pure Oil Co.	27	12	190,568	196,728	11,076	13,385
Republic Prod. Co.	11	5½	77,534	75,800	4,708	5,543
Richardson & Kelsey	1	1	936		474	
Roxana Pet. Corp.	33	15	294,804	287,819	15,546	17,654
Roxana and The Texas Co.	37	16	309,541	316,377	16,435	19,735
Skelly Oil Co.	12	4	260,429	274,134	9,607	11,744
Southern Crude O. P. Co.	78	42¾	276,812	261,960	27,390	30,202
Texon Oil & Land Co.	10	4	21,281	27,129	2,423	3,119
Winkler Co. O. P. Co.	1	¼	6,173	6,498	297	363
Units not in production		1 13/24			688	837
Total	363	168	2,496,491	2,505,902	149,490	174,944

Deep Rock Oil Co. will abandon its No. 1 Harris, Section 12, Block A-46, Andrews County, at 4,688 feet. This well caused a brisk acreage play in that section of the county when it topped a pay at 4,405 feet which was good for 3½ bailers of oil daily. Deep Rock company is rigging up to drill another test to the southeast about a mile. Many are of the opinion No. 1 Harris is on the edge of a big structure.

Roberts Pool Disappintment

J. S. Cosden & Co.'s No. 2 Dora Roberts-A, Section 129, Block 29, Howard County, is proving another Roberts Pool disappointment. It is an offset to Amerada and Rycade corporation's No. 1 Stewart which was a failure at 3,209 feet. No. 2 Roberts was plugged back from 3,124 feet to 3,117 feet and is making 3,000 bbls. of water and 900 bbls. of cut oil.

Coyle & Concord's No. 1 Dora Roberts-A, Section 156, Block 29, had the pay at 2,953 to 3,010 feet and the hole filled 1,000 feet with oil in three hours.

Louisiana Oil & Refining Co., a recent entrant in West Texas, bought the Dave Smith acreage in Sections 3 and 6, Block 32, Township 2s, paying a reported price of $175,000. According to the reports $75,000 was in cash and the remainder in oil.

Humble Pipe Line Co. expects to complete its 8-inch line from San Angelo to the Roberts Pool within the next two weeks. Great Western Co. has completed its 4-inch line from the Roberts Pool to its refinery site at Big Spring, and the Cosden Pipe Line Co.'s line from the pool to Big Spring is nearing completion.

Mid-Kansas Oil & Gas Co. and Transcontinental Oil Co.'s record shallow well, No. 5-D Yates in the Yates Pool, showed up a much greater potential producer on its recent proration test. Formerly the well was rated as a 5,355-bbl.-per-hour gusher at a total depth of 1,265 feet. Last week it was opened for a test and made 6,097 bbls. in one hour which gave it a rating of 146,248 bbls. daily.

Hendricks Extended North

Hendricks was extended three-quarters of a mile to the north when Southern Crude Oil Purchasing Co.'s No. 1 T-88-P, C NW, Section 28, Block 26, topped the pay at 2,898 feet and started flowing 20 bbls. per hour by heads at 2,900 feet. The area opened for further drilling, however, got a reversal when the well was deepened and encountered water.

The well was drilled to a total depth of 2,970 feet and was making 56 bbls. of fluid per hour, 30 per cent water. Water started showing at 2,940 feet, or 305 feet in the lime. Surface elevation of the well is 2,856 feet, top of lime 2,635 feet, making the pay 263 feet in the lime.

The same company's No. 1 T-88-R, SE cor. Section 27, Block 26, northwest of production about a half mile, is running high. The well topped the lime at 2,325 feet and has a surface elevation of 2,872 feet which makes the lime top 547 feet above sea level. The well is running 163 feet higher on top of the lime than a well three locations due west.

Southern Crude company's No. 4 T-88-U, SE SW SE, Section 41, Block 26, is another interesting well. It is on the extreme west flank of the structure and flowing 100 bbls. of pipe line oil hourly from pay at a total depth of 2,968 feet.

Sid Richardson, Frank Kelsey and White Eagle company's No. 1 Stockton Cattle Co., in Section 50, Block F, made close to 1,000 bbls. of clean oil on its best gauge last week. Six-inch casing was cemented and the plug will be drilled some time during the current week. Texas Pipe Line Co. complete a 4-inch line to the well from its loading rack at Monahans last week and is running the production.

Movement of Crude

During the first 20 days of September 2,837,804 bbls. of crude was moved from the Hendricks area. Of this total 1,841,365 bbls. was pumped through pipe lines, 741,710 bbls. was shipped in tank cars and 254,729 bbls. was delivered to West Texas refineries. At the end of the same period the total storage in the Hendricks district was 11,414,446 bbls., with 16,267,605 bbls. of storage completed and 745,000 bbls. of additional storage being built. Burford Oil Co. will add to that amount with an 80,000-bbl. tank to be built at its refinery site in Pecos City.

Cranfill & Reynolds and Sun Oil Co. are completing the fifth producer in the Fisher County light oil area with their No. 1 Willingham, Section 207. The pay was barely scratched at 3,121 feet and 1,200 feet of oil rose in the hole. Casing is being set and the well will probably be drilled in some time this week.

Going Into Storage

Crude produced in West Texas was estimated to be going to storage at the rate of 60,000 bbls. daily last week. Part of this is due to the fact that refining runs were cut sharply. The normal rate for the past few weeks has been around 40,000 bbls. daily.

Recent pipe line figures show the transporting companies moving around 213,000 bbls. daily. Tank car shipments slumped a little during the past two weeks.

Below is a table showing the daily crude shipments through main trunk lines for a seven-day period.

	Bbls.
Gulf P. L. Co., east to coast	25,186
Magnolia P. L. Co., east to coast	25,342
Illinois P. L. Co., south to coast	19,861
Humble P. L. Co., east to coast	42,980
Humble P. L. Co., south to coast	53,052
Pasotex P. L. Co., to El Paso	6,050
Shell P. L. Co., to Oklahoma	46,897
	213,368

West Texas production was down 5,962 bbls. last week due to losses in Hendricks, Yates and southern Howard County. The next seven-day estimate will reflect the 25,000-bbl. cut in Winkler County production.

WEST TEXAS COMPLETIONS

Crane County

Gulf Production Co.'s No. 54 McElroy, 2,102 feet from the north line and 1,320 feet from the west line of Section 200, Block F, C.C.S.D.&R.G.N.G.R.R. Survey, topped the lime at 2,720 feet, topped the pay at 2,890 feet, drilled to a total depth of 2,900 feet, was shot with 200 quarts at 2,790-2,890 feet and had an initial production of 450 bbls.

Glasscock County

Meriweather's No. 1 McDowell, 750 feet north and west of SW cor. Section 34, Block 34, T.&P.R.R. Survey, topped

(Continued on Page 135)

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended September 29

ANDREWS COUNTY

Company, farm and location— Remarks—

Deep Rock Oil Co.'s No. 1 J. W. Harris, C SE Sec. 12, Blk. A-46, Public School Land, elev. 3,167 ft. — Top salt 1,690 ft.; 1,500,000 ft. gas 2,946 ft.; show oil 4,210-63 ft. and 4,270 ft.; bailed 3 bailers heavy black oil, some water; small show oil 4,362-89 ft.; top pay 4,405 ft.; total depth 4,410 ft.; shut down 4,690 ft.; to plug.

Deep Rock Oil Co.'s No. 2 Harris, 2,310 ft. N and W of SE cor. Sec. 20, Blk. A-46 — Rig.

BORDEN COUNTY

Condor Oil Co.'s No. 1 E. A. Hall, 1,650 ft. S and W of NE cor. Sec. 5, Blk. 32, Twp. 3n, T.&P. Sur. — Building rig.

E. L. Doheny, Jr., No. 1 J. J. Koonsman, 330 ft. S and E of NW cor. Sec. 2, Blk. 2, T.&N.R.R. Sur. — Hole full water 290-360 ft.; drlg. 2,410 ft.; hole full water 2,085 ft.

Teas & Wheeler's No. 1 Long, 1,320 ft. N and E of Sec. 27, Blk. 30, T.&P. Sur. — Location.

BREWSTER COUNTY

Cowden & Bowser's No. 1-A Jackson & Harmon, Sec. 1, Blk. 331, T.C.R.R. Sur. — Shut down 1,500 ft.

Forrest Oil Co.'s No. 1 Skinner, C SW SE Sec. 100, Blk. 2, G.C.&S.F. Sur. — Shut down 1,145 ft.

J. M. Hickey's No. 1 Jackson & Harmon, NE cor. Sec. 182, Blk. 9, G.H.&S. A. Sur. — Shut down 1,079 ft.

Reese & White's No. 1 Kimbale, C NE Sec. 204, Blk. 9, G.H.&S.A. Sur. — Shut down 2,009 ft.

Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 mi. S of Alpine — Shut down 1,710 ft.

Williams and others' No. 1 Poncey, 459 ft. S and 1,062 ft. E Sec. 26, Blk. 214, T.&St.L.R.R. Co. — Shut down 360 ft.

COKE COUNTY

Cates & Dennis' No. 1 Mimms, 2,500 ft. S and 330 ft. E of NW cor. Sec. 47, Blk. 4, T.&P. — Shut down 600 ft.

Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H.&T.C. Sur., elev. 2,750 ft. — Repairing rig; shut down 2,836 ft.

Louisiana O. & R. Co.'s No. 1 Powers, 745 ft. S and 2,310 ft. E of NW cor. Sec. 156, Blk. 2 — Drlg. 450 ft.

Mid-Kansas Oil Co.'s No. 1 W. E. Lackey, 330 ft. N and E of SW cor. Sec 272, Blk. 1-A, H.&T.C. — Spudding.

CONCHO COUNTY

Exploration Co.'s No. 2 Hartgrove, 906 ft. S and 985 ft. E of NW cor. Johann Scheuch Sur. No. 240 — Rig.

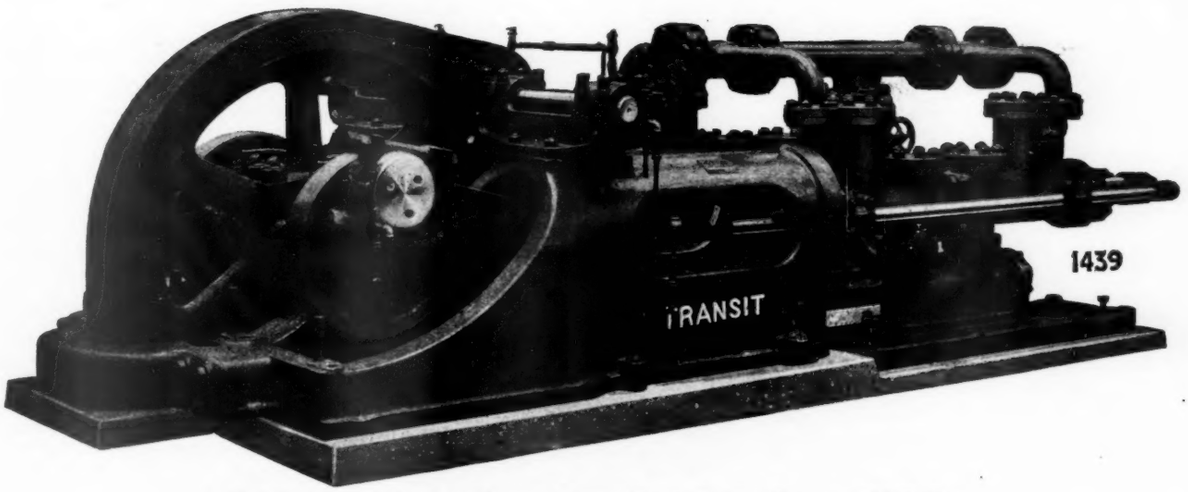
Kimberlin et al's No. 1 Maloy, Sec. 319, Ludwig Winkle Sur. — Set 8-in. casing 1,440 ft.

Posey's No. 1 Elvidge, C NW Sec. 39, H.&T.C.R.R. Sur. — Shut down 300 ft.

Gulf Prod. Co.'s No. 55 J. T. McElroy, 2,102 ft. S and 660 ft. E of NW cor. Sec. 200, Blk. F, C.C.S.D.& R.G.N.G. Sur. — Drlg. anhydrite 2,535 ft.

(Continued on Page 59)

TRANSIT
Power Pumps



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The fluid end is made up of four plunger chambers all made from one pattern, therefore strictly interchangeable. This same feature is found in the plungers, pedestals, discharge pipe manifolds and base plates.

Illustration shows pump arranged for left-hand drive with pinion gear on top of frame. However, either right or left-hand drive can be furnished with driving pinion on end or on top of frame.

These pumps are made in sizes between 3½x12″ and 5x24″, and for pressures between 500 and 1000 lbs. Send for description.

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Water Increasing in St. Louis Pool

Greater Seminole Takes Big Jump as Wells Are Opened Wide for Semimonthly Gauge. Little River Slipping

By J. L. Dwyer
Staff Correspondent, Oklahoma Fields

The wells of all flush regions of the State were thrown wide open on the last two days of September with a substantial increase as a result. The Greater Seminole area had declined to 309,930 bbls. on Friday, September 28, and the gauge of the pools on Monday, October 1, was 324,528 bbls. from 1,232 wells. The wells on this date were also wide open and the repinching in of production was under way. The output by pools on Monday morning was:

Little River	133,008
Maud	48
Mission	235
Bowlegs	51,686
Earlsboro	83,381
Seminole	44,557
Searight	11,413
Total barrels	324,328

The St. Louis area remained around 117,000 bbls. for the greater part of the week, and the increasing water intrusion in this pool influences the thought that possibly the peak has been passed.

In the Little River Pool of the Seminole area the older production is dropping off rapidly, and it requires the new wells to hold up the output of the pool. On several days last week prior to the wide-open flow of the wells, the output of Little River was slipping.

East of the Little River Pool, the Mid-Continent Petroleum Corp.'s No. 1 Smith, NW cor. NE Section 5-7-7, was drilled 1 foot deeper with good results. This was the discovery well which opened this side of the pool, and before deepening the well was making 970 bbls. per day. After deepening, the well flowed 1,650 bbls. per day. There have been 12 wells started around this spot, and it is believed that amount will comprise the present activity of the sector. The Mid-Continent Smith well was flowing by heads before deepening, and since deepening, the well heads up much more rapidly.

Interesting Dry Holes

There were two interesting dry holes in the Little River district completed last week by T. B. Slick, Inc. One was on the west side of the pool and one on the south side of the pool. No. 7 Williams, SE cor. SE NE Section 15-7-6, had 1,500 feet of water in the hole from the Wilcox sand at 4,350-53 feet, was somewhat of a surprise, as it had been running higher than the surrounding wells, and was expected to be a producer.

In the south end of the Little River Pool, T. B. Slick, Inc.'s No. 1 Wood, NE cor. NW Section 26-7-6, was a failure in the Wilcox sand with a hole full of water. The sand in this well was 4,464-70 feet, and the well is shut down for orders, although it is almost certain to be plugged as a failure. This was very interesting, as had the well been a producer it would have caused a 1½-mile extension to the pool. The sand was dropping off rather rapidly in this direction. It seems unlikely that any more drilling will be done in this part of the pool for some time, as the Slick well to some extent seals the fate of the south trend of development.

The two wells mentioned seem to cut off any possible extensions of the pool excepting some slight work on the west side of Section 13-7-6, and possibly some little drilling in Section 23-7-6. Both of these spots, however, are merely offering a few locations which will possibly furnish wells of average yield.

On the north side of the Little River Pool, The Texas Company's No. 1 Brooks, SW cor. NW Section 25-8-6, caused production to be extended several locations to the north. This well had the Wilcox sand at 4,143-51 feet, and swabbed 827 bbls. the first 24 hours. There will be some additional drilling as a result of this well.

Earlsboro Extension

The east extension of the Earlsboro Pool was quiet with no completions of importance and no extensions. Interest in this spot which was started some time ago by the Atlantic Oil Producing Co. and the Skelly Oil Co.'s No. 1 Cherry has now begun to lag.

The St. Louis Pool of Pottawatomie County has been the scene of the greatest interest for several weeks. As mentioned, it is possible that the peak of production in this area has been passed. The water intrusion increases, and recent developments have been disappointing. One of the most interesting wells is the Sinclair Oil & Gas Co.'s No. 1 Nadash, NE cor. SW NW Section 29-7-5, which had the Wilcox sand at 4,240-61 feet. This well encountered 2,000 feet of water and was plugged back to 4,250 feet, at which depth the water seems to be eliminated to some extent for the well made 42 bbls. the first 45 minutes. The presence of water in this well may be taken as indicating the southeast limit of the pool.

Shortage of Water

Water for operating purposes has become a serious matter in the St. Louis Pool, and there were about 50 wells shut down for lack of water in the field last week. The shortage of water was so acute that some of the air lift plants were shut down for limited periods during the week. The exceptionally dry season has taxed the water supply of this territory, and several of the larger companies have started laying water lines to various streams in the vicinity. There are about 50 water wells being drilled by small machinery, and fresh water is struck at a depth of 90 feet.

St. Louis Pool

In the St. Louis Pool, the Independent Oil & Gas Co.'s No. 2 Youts, SW cor. NE SE Section 19-7-5, is now making 3 per cent water and b.s. at the well head. The Mid-Continent Petroleum Corp.'s No. 1 Guinn, SW cor. SE NE Section 20-7-5, is also making 2 per cent water and b.s. and is dropping rapidly in output. The past week has witnessed the decline of this well from 4,130 bbls. to 2,660 bbls.

The Wilcox sand discovery well of the pool, Magnolia Petroleum Co.'s No. 1 Hembree, NW cor. SE Section 19-7-5, was making 1,500 bbls. of fluid which is 50 per cent water. Magnolia Petroleum Co.'s No. 1 Tyke, SW cor. NW Section 20-7-5, had the Wilcox sand at 4,170 feet with 600 feet of water and b.s. in the hole. This well is located directly between the main body of production and the Mid-Continent Petroleum Corp.'s No. 1 Guinn, and was therefore considered in proven territory. It is a sharp disappointment. On the west side of the pool, the Sinclair Oil & Gas Co.'s No. 4 Kitchee, SE cor. NW SW Section 19-7-5, had the Wilcox sand 4,293-97 feet steel line measurement and found only 1,200 feet of water in the formation. The well had 2,500 feet of oil in the Simpson sand.

Other interesting wells of the week were Magnolia Petroleum Co.'s No. 1 H. E. Youts, NW cor. SW, Section 20-7-5, which was drilling 17 feet in the Wilcox sand at 4,290 feet and had a hole full of oil with no natural flow. This well will be put on the air lift. The Barnsdall Oil Co.'s No. 1 Stahl, NW cor. SW NE, Section 30-7-5, swabbed 707 bbls. in eight hours from the Wilcox sand 4,337-54 feet with no water. Magnolia Petroleum Co.'s No. 2 Youts, SE cor. SE, Section 20-7-5, had the Wilcox sand 4,219-27 feet, and swabbed 744 bbls. in 20 hours. This well is also a disappointment. Independent Oil & Gas Co.'s No. 6 Youts, SE cor. SE, Section 19-7-5, had the sand 4,120-37 feet and flowed 595 bbls. the first seven hours.

Pipe Line Relief

The pipe line situation at St. Louis has been relieved by additional construction. The Independent Oil & Gas Co. is planning to take up its old 4-inch line from old Seminole to Township 9-9, in Hughes County and replace it with a 6-inch line. The company has a 6-inch line into the St. Louis Pool from Little River. This will give the Independent ample pipe line facilities to take care of most of its own production in the St. Louis Pool and transport it to its refinery at Okmulgee. The present pipe lines into the St. Louis Pool and their capacity and average runs are given below:

Line—	Capacity	Runs
Consolidated P. L. Co.	1,500	1,500
Gulf	9,000	9,000
Independent	15,000	10,978
Magnolia	30,000	21,192
Oklahoma	17,500	7,470
Prairie	45,000	37,496
Shell	4,000	3,556
Sinclair	45,000	41,171
Total	167,000	132,357

The pipe line situation in the older parts of Seminole shows slight change. The crude movement of the pipe lines for the week ending Saturday, September 29, is given below:

Barnsdall	2,982
Champlin	10,137
Continental	2,645
Consolidated	518
Mid-Continent	14,316
Empire	12,278
Gulf	36,569
Magnolia	26,390
Oklahoma	63,467
Prairie	62,945
Pure	1,860
Shaffer	5,922
Shell	10,140
Sinclair	26,963
Texas	15,742
Tidal	9,994
White Oak	1,913
Total	304,642

In addition to this the average tank car shipments out of the field were 12,187 bbls. daily.

The Wilcox sand production of the St. Louis Pool on Monday, October 1, was:

Barnsdall Oil Co.:	
No. 1 Stahl	964
Gypsy-Sinclair et al:	
1 Stahl	4,184
2 Stahl	4,304
Phillips Pet. Co.:	
2 Stahl	6,587
Sinclair Oil & Gas Co.:	
1 Nadash	0
Magnolia Pet. Co.:	
1 Hembree	865
2 Hembree	6,466
3 Hembree	1,800
4 Hembree	6,273
1 Youts	0
2 Youts	2,276
1 Fyke	570
T. B. Slick, Inc.:	
1 Hembree	5,525
2 Hembree	4,870
3 Hembree	6,322
4 Hembree	0
1 Youts	4,129
Mid-Continent Pet. Corp.:	
1 Guinn	2,220

(Continued on Next Page)

WILDCAT OPERATIONS IN OKLAHOMA

NORTHERN OKLAHOMA

LATTIMER COUNTY

Limestone Oil & Gas Co.'s No. 1 McMurray, SW cor. SW Sec. 15-5-18 ..... Underreaming 1,718 ft.

GRANT COUNTY

Otstot Development Co.'s No. 1 Snyder, NE cor. NE Sec. 6-28-3w ..... Dry and abandoned 4,546 ft.
J. V. Bailey and others' No. 1 Maddox, C SE Sec. 18-27-5w ..... Dry and abandoned 5,058 ft.
Cowden and others' No. 2 Vollmer, CEL NE SW Sec. 22-26-4w ..... Shut down 5,640 ft.

HARPER COUNTY

Hoffer Oil Co.'s No. 1 Cooper, NW cor. SE SE Sec. 12 25-22w ..... Shut down 4,130 ft.

KAY COUNTY

Ponca Lee Oil's No. 1 McNeil, NW cor. NE Sec. 32-26-2e.. Dry and abandoned 2,645 ft.
Geo. L. Miller and others' No. 1 Home, NW cor. SE Sec. 11-24-3 ..... Casing 3,675 ft.
Lario Oil Co.'s No. 1 McKay, NW NE Sec. 14-29-1 ..... Drlg. 1,622 ft.
Riley Royalty Co.'s No. 1 Manley, SE cor. NE Sec. 9-26-1.. Dry and abandoned 1,000 ft.
Tonkawa Development Co.'s No. 1 McDaniels, SE cor. SE Sec. 15-25-1w ..... Wilcox sand 4,915-4,926; dry and abandoned.

WOODWARD COUNTY

Otstot Development Co.'s No. 1 Simmons, SE cor. SE Sec. 32-24-17w ..... Shut down for pipe 1,490 ft.
Sharon Oil Co.'s No. 1 Elmore, SW cor. SW Sec. 25 21-21w ..... Rig blown down 3,025 ft.
Billy's Oil Co.'s No. 1 Watt, C SE Sec. 9-23-20w ..... Shut down 500 ft.
Burgoyne Brothers' No. 1 Merklin, SW cor. SE NE Sec. 15-21-19w ..... Drlg. 1,684 ft.
Farrond and others' No. 1 Johnson, SW cor. SW Sec. 1-23-17w ..... Underreaming 1,535 ft.

GARFIELD COUNTY

E. L. Love and others' No. 1 White, SE cor. NW Sec. 9-24-6w ..... Shut down 4,755 ft.
Marland and Barnsdall's No. 1 Looman, NE SE Sec. 9-20-4w ..... Shut down 5,735 ft.
Marland Oil Co.'s No. 1 Miller, SW cor. SW Sec. 12-20-4w. Shut down at 4,575 ft. waiting on test Sec. 9-20-4w.

ELLIS COUNTY

Hoffman and others' No. 1 Ottes, NW cor. NE Sec. 20-15-3w ..... Rig blown down, test abandoned.

NOBLE COUNTY

Alco Royalty Co.'s No. 1 Waltermire, SE cor. NW Sec. 33-21-1w ..... Location.
Marland Oil Co.'s No. 1 Kidd, NW cor. SW Sec. 32-20-1w ..... Shut down at 5,290 ft.; plugging back to show oil 1,836 ft.

KINGFISHER COUNTY

Slick & Harrington's No. 1 Cromer, SE cor. NE NE Sec. 25-19-5w ..... Location abandoned.
Galt-Brown Oil Co.'s No. 1 Wolff, NW SE Sec. 6-16-7w.. Completed contract 4,515 ft.; shut down.
McKinney & Crawford's No. 1 Sturgeon, NE cor. SW Sec. 27-16-6w ..... Shut down 4,509 ft.

LOGAN COUNTY

Champlin Refining Co.'s No. 1 Clark, SE cor. SW Sec. 8-19-4w ..... Dry and abandoned 6,726 ft.
Margay Oil Co.'s No. 1 Cole, SE cor. SW NE Sec. 24-18-5w ..... Rig.
Haley & Smith's No. 1 Guier, SE cor. SW Sec. 33-18-3w.. Shut down 3,940 ft.
Garber & Pulse's No. 1 Widdoes, NE cor. SE NW Sec. 32-18-3e ..... Abandoned 1,200 ft.
J. L. Donahoe's No. 2 fee, SW cor. NW SE Sec. 21-18-2w.. Drlg. 4,165 ft.
T. B. Slick's No. 1 Bryan, SW cor. SE Sec. 28-17-1 ..... Completed 25 bbls. 4,644-54 ft.
Willis and others' No. 1 Sweezy, SW cor. NW SE Sec. 20-17-3 ..... Dry and abandoned 4,732 ft.
Bu-Vi-Bar's No. 1 Kirkpatrick, NE SW SW Sec. 12-16-1w. Dry and abandoned 5,675 ft.

(Continued on Page 102)

FISHER

"Remote Type"

Liquid Level Controllers

Since 1880 FISHER has advanced every new step in refining processes by the building of devices to assure *accurate and efficient control with economical operation.* FISHER'S development of such dependable equipment has raised *automatic functioning* to the "nth" degree. FISHER devices are not considered as "pieces of machinery"—they are SYSTEMS—accepted standards of known service and guaranteed satisfaction. Most outstanding in the development of Liquid Level Controllers is the REMOTE CONTROL TYPES—*the only devices of their kind on the market.*

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The Fisher "Remote" Liquid Level Controller makes possible an installation wherein the "float cage" and the "operating valve" can be placed at wide distances apart. Even though installed at different points the operation is *positive and rapid*—no lost motion—no manual operation—no pulleys, chains, etc.

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Type No. 240
Liquid Transmission

The Type No. 240—This controller is operated by means of a special liquid transmission flowing to and from the cage and valve in a seamless copper tube. This tube can be bent around obstruction, up or down and permits of a range of operation of up to 75 feet. These devices are used for controlling a liquid flow into a tank, etc., or for a pre-determined out flow or drain valve.

The most typical use for the "Remote Control" is where the "float cage" is placed on a tank located outside or in a different building and the "valve" located in the pump house on the pump discharge line.

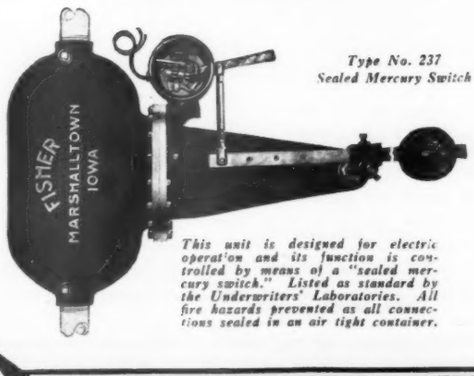
This however is but one of the many adaptions. It economically and efficiently solves the problem where piping, walls, I-beams, or other obstructions prevent the direct connection of the float cage to the valve.

Fisher "Remote Controllers" are built in three types (see cut titles)—each designed for specific installations and distances. Essentially they function alike. All of these devices are extremely sturdy—fool-proof—simple and have no delicate wearing parts or complicated settings. Built in a wide range of pipe sizes and for any pressure or temperature.

These efficient "Remote Controllers" are fully illustrated and detailed in Bulletin No. 35—write for a copy. And—at the same time take advantage of Fisher's engineering service and discuss your problem—no obligation.

The Fisher Governor Company

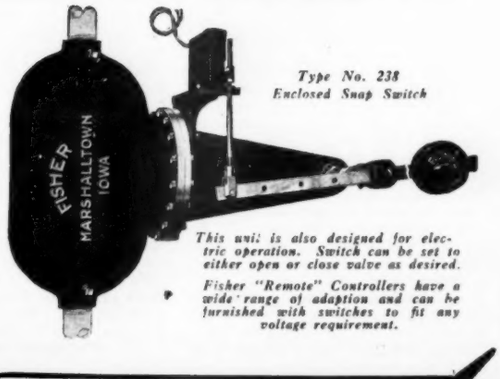
900 Fisher Bldg. **Marshalltown, Iowa**



Type No. 237
Sealed Mercury Switch

This unit is designed for electric operation and its function is controlled by means of a "sealed mercury switch." Listed as standard by the Underwriters' Laboratories. All fire hazards prevented as all connections sealed in an air tight container.

There's a type to fit every condition - - to cover any distance - - and to handle any liquid or gas - - hot or cold.



Type No. 238
Enclosed Snap Switch

This unit is also designed for electric operation. Switch can be set to either open or close valve as desired.

Fisher "Remote" Controllers have a wide range of adaption and can be furnished with switches to fit any voltage requirement.

Independent Oil & Gas Co.:	
1 Youts	7,040
2 Youts	4,610
3 Youts	4,345
4 Youts	4,065
5 Youts	4,740
6 Youts	1,920
Prairie Oil & Gas Co.:	
1 Wolfe	Off
Total barrels	84,015

Beckham County

Magnolia Petroleum Co.'s No. 1 M. Hawkins, NW cor. SE NE, Section 21-9-23w, has been completed for 15,000,000 feet of gas after cementing pipe at 2,317 feet and drilling to 2,731 feet.

Caddo County

English Drilling Co.'s No. 4 Gafney, NE cor. NW SE, Section 31-6-9w, has been abandoned at 2,290 feet.

Carter County

Magnolia Petroleum Co. is building the rig for No. 1 Gill, SE cor. NE SE, Section 23-1s-3w. No. 1 Martin, NW cor. SE, Section 23-1s-3w, made 40 bbls. from sands at 2,319-2,485 feet. Cotton Belt Petroleum Corp.'s No. 7 Rexroat, NW cor. NE SW, Section 10-4s-2w, made 60 bbls. from sand at 1,645-75 feet.

Creek County

Houston Oil Co.'s No. 2 Bullet, NW cor. SE NE, Section 20-17-7, is rigging up. Twin State Oil Co.'s No. 4 Coachman, NE cor. SW NE, Section 20-17-7, is spudding. Oscar, Anderson and others' rig is up for No. 1 Manuel, SE cor. NE SE, Section 16-19-7. Atlantic Oil Producing Co. and others erected the rig for No. 1 Thomas, SW cor. NE NE, Section 32-15-7. Gled Oil Co.'s No. 2 Murrell, NW cor. SW NW, Section 17-19-9, is spudding. Winemiller Corp. made location for No. 1 Darrisaw, SE cor. SW, Section 34-19-9.

Vickers Syndicate has the rig up for No. 1 Unallotted, SW cor. SE SW SE, Section 34-18-11. C. G. Tibbens' No. 10 White, NE cor. NW, Section 9-18-12, is spudding. The rig is up for No. 3 Carman, NW cor. SE NW, Section 29-15-9. Barnsdall Oil Corp. has the rig up for No. 2 Smith, CEL NE NW, Section 1-15-10. F. D. Misner and others' No. 1 Kimble, NW cor. SE NE, Section 33-15-10, is spudding. T. Kelly and others made location for No. 1 Anderson, SW cor. SE, Section 26-14-9.

Tidal Oil Co.'s No. 3 Robinson, NE cor. SW SE, Section 20-17-7, made 50 bbls. from sand at 2,791-2,804 feet. Woodland Oil Co.'s No. 1 Manuel, NW cor. SW, Section 15-19-7, pumped 35 bbls. oil from sand at 2,718-75 feet. Houston Oil Co.'s No. 1 Bullet, SW cor. SE NE, Section 20-17-7, made 210 bbls. from sand at 2,828-40 feet. Sand Springs Home's No. 1 T. Atkins, SW cor. NE, Section 5-18-7, is pumping 15 bbls. from sand at 2,585-2,667 feet. McMan Oil Co.'s No. 1 Bond, NW cor. Section 6-19-9, is dry and abandoned at 3,300 feet in Wilcox sand.

Gypsy Oil Co.'s No. 12 Luckey, SE cor. SW NE NE, Section 28-16-9, which was deepened to the Wilcox sand at 3,486-95 feet, is dry and abandoned. Shaffer Oil & Refining Co.'s No. 1 Steil, NE cor. SE, Section 7-16-11, has been abandoned at 2,825 feet in Wilcox sand. McCulloch Oil Co.'s No. 1 Vencil, SE cor. NE, Section 31-14-9, is a dry hole in Wilcox sand at 3,890-3,960 feet. The Prairie Oil & Gas Co.'s No. 1 Koch, C SW NW, Section 36-18-7, has been completed for 2,392,000 feet of gas in Tucker sand at 2,971 feet.

Grady County

Meridian Gas Co. made location for No. 2 Hill, SW cor. Section 25-5-8w. Magnolia Petroleum Co. is building the rig for No. 3 M. Smith, SE cor. NE NE, Section 35-5-8w. No. 2 Smith, NE cor. Section 35-5-8w, was completed for 50,000,000 feet of gas in sand at 2,150-2,388 feet. Carter Oil Co.'s No. 3 Spaulding, SW cor. SE NE, Section 21-3-5w, has been abandoned at 2,590 feet.

Grant County

Argo Oil Co.'s No. 3 Stewart, NE cor. SE SE, Section 22-27-3w, Deer Creek Pool, was deepened to sand at 3,983-98 feet and completed for 80 bbls. J. V. Bailey's No. 1 Custard, C SE, Section 18-27-5w, has been abandoned at 5,058 feet in Wilcox sand.

Jefferson County

Bridewell and others' No. 1 Seay, SE cor. Section 31-6s-5w, is drilling at 1,024 feet. Gypsy Oil Co.'s No. 6 Busby, NW cor. SE SW, Section 17-7s-5w, is drilling at 520 feet.

Kay County

Walters and others dug cellar and ponds for No. 3 Skein, NW cor. SE SW, Section 19-29-1. Oil Belt Oil Co.'s No. 2-A Murdock, SE cor. SW SW, Section 2-27-3, is drilling at 370 feet. Marland Oil Co. and Amerada Petroleum Corp.'s No. 3 White, C SW NW, Section 17-29-1, made 423 bbls. from Wilcox sand at 3,363-89 feet. Tidal Oil Co.'s No. 1 Cole, CSL N half NE SE, Section 18-29-1, Vernon Pool, has been completed for 3,000,000 feet of gas in chat at 3,204-40 feet. Nye & Farrell's No. 1 Gillig, NW cor. SW NW, Section 28-29-1, missed the shallow gas sand and has been abandoned at 1,474 feet.

Lincoln County

J. V. Bailey and others moved the rig out for No. 1 House, C NE SE, Section 15-16-4. Bu-Vi-Bar Petroleum Co.'s No. 1 School Land, C NE SE, Section 16-13-4, is dry and abandoned at 5,330 feet.

Logan County

T. B. Slick is building the rig for No. 1 Terhune, SE cor. NW, Section 17-18-4w.

Osage County

Oklahoma Natural Gas Corp. has a machine at the location for No. 1,654, SE cor. NE SE, Section 28-21-11. Indian Territory Illuminating Oil Co.'s No. 402, SW cor. SE SW SW, Section 28-23-9, is a machine rigging up. L. G. Stanley and others' No. 1-A, NW cor. Section 15-25-8, made 8 bbls. from sands at 994-1,018 and 1,063-94 feet. Marland Production Co. and others' No. 9, NE cor. SE NW, Section 15-24-8, made a 20-bbl. well in sand at 488-501 feet. Indian Territory Illuminating Oil Co.'s No. 399, SW cor. NW SW, Section 28-23-9, was completed for 2,750,000 feet of gas in sand at 490-502 feet. Oklahoma Natural Gas Corp.'s No. 764, SW cor. NE NE, Section 14-21-10, has been completed for 250,000 feet of gas in Bartlesville sand at 1,879-1,923 feet. Clint Moore estate and Ohio Osage Oil Co.'s No. 11, NW cor. SE SW, Section 9-21-9, made 3 bbls. from sand at 412-17 feet.

Okfuskee County

Producers & Refiners Corp. has the rig up for No. 1 Monarye, NW cor. NE SE, Section 29-12-10. E. L. Robinson and others' rig is up for No. 3 Severs, NE cor. NW SE, Section 35-11-9. Atlantic Oil Producing Co.'s No. 1 Fife, NE cor. NW, Section 7-10-12, drilling deeper from 2,630 feet has a 35-bbl. show in Lyons-Quinn sand at 2,849-60 feet, total depth 2,869 feet.

Okmulgee County

L. C. Wheeler and others' rig is up for No. 1-A Cornelius, SW cor. NE NE, Section 35-15-12. Denver Producing & Refining Co.'s No. 2 Thomas, C NE NE, Section 32-13-11, is rigging up to deepen from 3,227 feet. Sheldon Oil Co. and others moved the rig to the location for No. 4 Skelton, CSL SW SE, Section 15-13-12.

Sheridan Oil Co.'s No. 3 Chase, SW cor. NE SW, Section 8-15-12, is dry and abandoned in Wilcox sand at 2,723-44 feet. Noble Oil & Gas Co.'s No. 1 Replogle, NE cor. SW NE, Section 12-15-12, has been completed for 10 bbls. in sand at 1,246-56 feet. R. Garrett and others' No. 2 Madigan, SE cor. SW NW, Section 30-14-11, is dry and abandoned in Wilcox sand at 3,200-11 feet. Rebold Oil Co.'s No. 1 Bird, CEL SE NW, Section 22-13-12, has been abandoned in Dutcher sand at 2,188-2,200 feet.

Devonian Oil Co. has the rig up for No. 1-A Campbell, NE cor. NW NW, Section 19-15-14. Riney & Williams moved a machine to the location for No. 4 Stevens, NW cor. SW SE, Section 9-14-14. Gentry and others' No. 1-A Doyle, NW cor. SE, Section 20-13-14, is drilling at 700 feet. Iron Mountain Oil Co.'s No. 12 Thornsberry, SW cor. NE NE NW, Section 24-13-14, is drilling at 800 feet.

Unger Brothers' No. 1 S. Sells, NW cor. NE, Section 25-15-14, made 30 bbls. from sand at 1,560-76 feet. F. D. Misener's No. 3 Colbert, NE cor. SW, Section 14-14-14, made 25 bbls. from sand at 1,709-26 feet. Troutt Drilling Co.'s No. 8 Doyle, C NW NW, Section 28-13-14.

(Continued on Page 132)

SEDGWICK COUNTY, KANSAS, TEST BEING WATCHED WITH INTEREST

By J. L. Dwyer
Staff Correspondent, Kansas Fields

In the Lost Springs district of Marion County, T. C. Johnston's No. 2 McCoy, SE cor. NW SE, Section 14-17-4, had the chat 2,326-49 feet and is drilling at that depth. The well is estimated from 30 to 50 bbls. daily.

In Sedgwick County, J. H. Tatlock and the Roxana Petroleum Corp. have made a location for No. 1, SW cor. SW, Section 25-28-2. This is reported to be one of the best core drilled structures in Kansas and will be watched with interest.

Courtney B. Davis has a gas well in the chat in No. 1, SW cor. NW, Section 7-19-3, which was also reported on a core drilled structure. The chat was found from 2,425-27 feet, and the well is making 1,500,000 feet of gas through 20 feet of cavings.

Butler County

Dixie Oil Co. made location for No. 2 Alberts, SW cor. SE, Section 21-25-4. W. R. Ramsey's No. 3 Simpson, CSL SW NW, Section 5-27-6, made 240 bbls. from sand at 2,720-62 feet. Liggett and others' No. 1 Morti, SW cor. NW SE, Section 7-28-7, is dry and abandoned at 2,726 feet.

Chautauqua County

Elmwood Oil Co.'s No. 4 Hilton, NW cor. SE NW, Section 13-32-9, is spudding.

Greenwood County

W. M. McKnabb's No. 1 Wallace, NE cor. NW, Section 22-23-4, is rigging up to deepen from 2,374 feet. Little Martha Oil Co.'s No. 3 Sandstrum, SW cor. NW, Section 24-33-6, is dry and abandoned at 1,943 feet.

Elk County

Litteral and others' No. 1 Townsite, Block 32, Lot 3, NW cor. SW SE, Section 10-31-10, is moving in a machine.

Greenwood County

Sheedy and others' No. 9 Green, SE cor. SW NW, Section 11-23-9, is rigging up. Empire Oil & Refining Co.'s No. 1 Braddock, NW cor. Section 24-22-11, is dry and abandoned at 2,020 feet. Braden & McClure's No. 3 Young, NE cor. SE NE, Section 22-22-13, has been abandoned at 1,905 feet. The Prairie Oil & Gas Co.'s No. 1 Burke, NW cor. NE NW, Section 1-24-8, has been abandoned at 2,755 feet.

Rooks County

Krueger and others made location for No. 2 Tatkenhorst, SW cor. SE SW, Section 11-9-16w.

Sedgwick County

Tatlock and others made location for No. 1 Cook, SW cor. Section 25-28-2.

KANSAS WILDCATS

BARBER COUNTY

Barbara Oil Co.'s No. 1 Blunk, C NE NW Sec. 20-34-13w..Drlg. 4,260 ft.
J. K. D. Shaffer's No. 1 Boggs, SW cor. NE SW Sec. 19-33-12w ..... Dry and abandoned 6,185 ft.
Skelly Oil Co. et al's No. 1 Winter, C E half Sec. 17-31-12w ..... Dry and abandoned 4,530 ft.

BARTON COUNTY

Everett & Wiley's No. 1 Ward, NW cor. SW, Sec. 12 20-13w ..... Shut down 3,948 ft.
McJilton et al's No. 1 Evanston, SE cor. NW Sec. 34-17-11w ..... Rig.
Mid-West Exploration Co.'s No. 1 Karst, SW cor. SW Sec. 11-16-15w ..... Rig.

BUTLER COUNTY

O. H. Fleming et al's No. 1 Brainard, NE cor. NW Sec. 22-24-3 ..... Underreaming 2,670 ft.
Joe Liggett's No. 1 Marti, SW cor. NW SE Sec. 7-28-7...Drlg. 2,702 ft.
LaRobb et al's No. 1 Brensenger, NE cor. SW, Sec. 24-27-3 ..... Rig.
Mid-Kansas O. & G. Co. et al's No. 1 Harsh, NE cor. SW Sec. 5-24-3 ..... Dry and abandoned 2,680 ft.
White Eagle O. & R. Co.'s No. 1 Dixon, NE cor. SE SW Sec. 1-27-6 ..... Dry and abandoned 3,105 ft.

CHASE COUNTY

Griener & Fowler's No. 1 Carson, NE cor. NE Sec. 9-21-7 ..... Drlg. 3,095 ft.

COWLEY COUNTY

Jones & Hall's No. 1 Shapland, NE cor. NW SE Sec. 20-30-6 ..... Drlg. 2,960 ft.
Roxana Pet. Corp.'s No. 1 Galley, NE cor. NW SW Sec. 18-35-3 ..... Shut down 2,050 ft.
Pyle & Sutter's No. 1 Lindstrom, SW cor. NE Sec. 9-35-4 ..... Rig.
Prairie Oil & Gas Co.'s No. 1 Shane, SE cor. NW Sec. 13-33-3 ..... Drlg. 2,630 ft.
Roth & Faurot's No. 1 Ehmke, NE cor. NW Sec. 14-32-3..Dry and abandoned 3,466 ft.
Crow & White's No. 1 Powers, C NW NE Sec. 9-32-5.....Drlg. 450 ft.
Slick & Martin's No. 1 Aspaugh, SW cor. NE Sec. 27-31-5 ..... Rig.
J. B. Markey's No. 1 Tatum, SE cor. SW Sec 11-31-6....Shut down 500 ft.
Jones & Hall's No. 1 Shapland, SE cor. NW SE Sec. 20-30-6 ..... Drlg. 3,125 ft.

DICKINSON COUNTY

Empire G. & F. Co.'s No. 1 Duffy, NE cor. SW SE, Sec. 3-12-3 ..... Dry and abandoned 2,982 ft.
Franks & Johnson's No. 1 Schlessner, C SW NE Sec. 13-16-4 ..... Dry and abandoned 2,323 ft.
Watchorn O. & G. Co.'s No. 1 Mowrer, NW cor. SE Sec. 33-16-4 ..... Dry and abandoned 2,630 ft.

ELLIS COUNTY

Derby Oil Co.'s No. 1 Weigel, C NW Sec. 26-12-17w .....Dry and abandoned 4,068 ft.
Rush Oil Co.'s No. 1 Gatewood, NW cor. NW Sec. 4-15-20w ..... Drlg. 1,050 ft.
Transcontinental Oil Co.'s No. 1 Boetcher, NW cor. SE SW Sec. 21-13-19w ..... Drlg. 2,580 ft.
Finney & Weiner's No. 1 Freeman, SE cor. SW Sec. 24-15-20w ..... Rig.
Labette Oil Co.'s No. 1 Urban NE cor. NW NW Sec. 19-15-16w ..... Drlg. 1,245 ft.
James Brooks' No. 1 Wagner C SE SE Sec. 35-15-16w.....Spudded.
Derby Oil Co.-Empire Oil & Ref. Co.'s No. 1 Krause NW cor. SW SW Sec. 17-14-19w ..... Drlg. 2,845 ft.
Phillips Pet. Co.'s No. 1 Brull, C NW Sec. 34-14-17w.....Spudded.
Moncrief et al's No. 1 Johnson, SW cor. NE Sec. 19-13-19w ..... Rig.
John Brown's No. 1 Gestner, SE cor. SW NE Sec. 13-13-18w ..... Spudded and shut down.
Empire Oil & Ref. Co.'s No. 1 Wann, NE cor. NE, Sec. 31-12-19w ..... Drlg. 1,380 ft.
Phillips Pet. Co.'s No. 1 Shultz, C NE Sec. 5-12-17w.....Drlg. 2,415 ft.
Mid-West Exp. Co.'s No. 1 Austin, NE cor. NE Sec. 36-12-16w ..... Fishing 3,045 ft.
Marland Oil Co.'s No. 1 Vine, SW cor. SW SE Sec. 27-11-19w ..... Spudded.
Stearns & Streeter's No. 1 Plummer, NW cor. SE Sec. 2-11-17w ..... Drlg. 2,790 ft.
T. B. Slick, Inc.'s No. 1 Craig, C NW NE Sec. 8-11-16w..Rig.

EDWARDS COUNTY

Amerada & Wilcox' No. 1 Teansil, C NW SW Sec. 32-25-19w ..... Drlg. 2,640 ft.

GEARY COUNTY

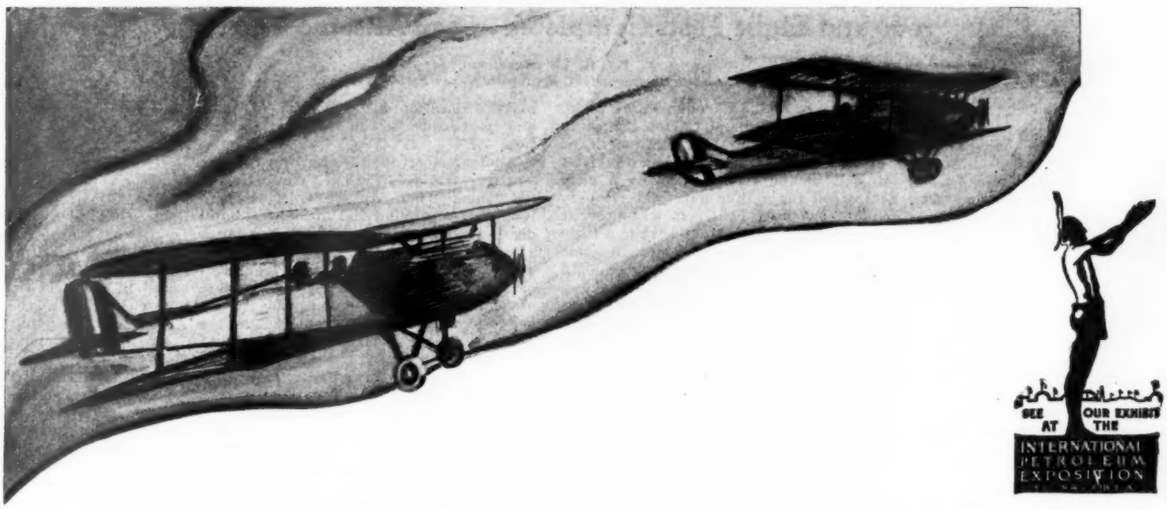
Pioneer Oil Co.'s No. 1 Chase, SE cor. SE Sec. 19-12-7....Drlg. 3,250 ft.
Wright et al's No. 1 Younker, NW cor. NE Sec. 17-11-5...Shut down 600 ft.

GREENWOOD COUNTY

Bisagno et al's No. 1 Gilroy, NW cor. SW SW Sec. 8-25-13 ..... Drlg. 700 ft.

(Continued on Page 98)

Landis Thread Cutting Equipment



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Landis design further insures the accomplishment of any job in the most economical manner, and in the shortest space of time.

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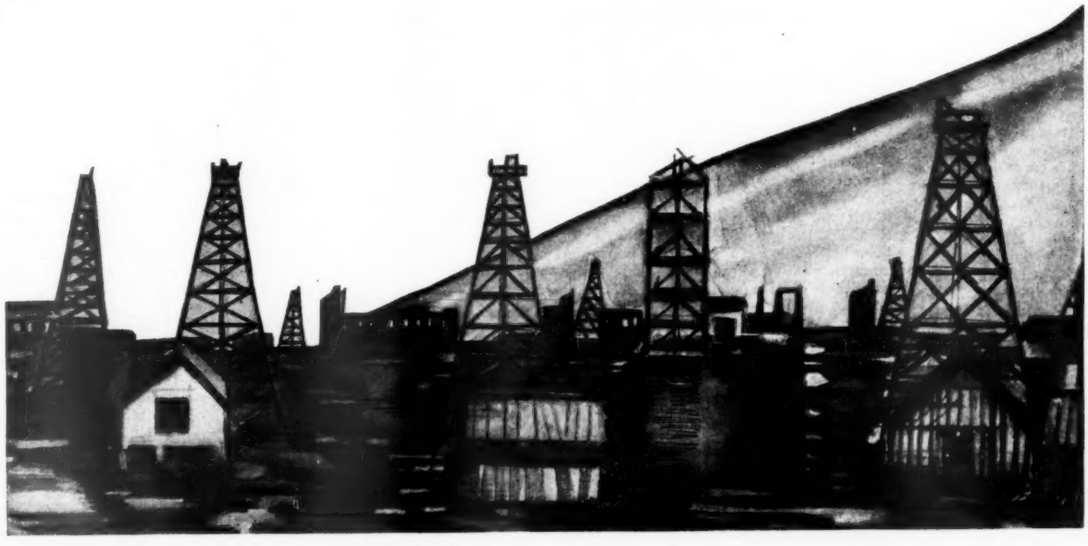
See our exhibit at the International Petroleum Exposition and Congress. Booths 96 and 97, Oklahoma Building.



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Good Gasser Completed in Saxet Field

Four Oil Wells and One Gas Well Brought in Near Laredo and Eight Tests Completed in San Antonio Territory

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Oct. 1.—Four oil wells and one gas well were completed in the Laredo territory of Southwest Texas last week and two gas wells and six oil wells in the San Antonio territory. In the Saxet Field on the south side of Nueces Bay, the Saxet company completed its No. 1 Walton which is a quarter of a mile west and south of nearest production and at 2,300 feet got a 25,000,000-foot gas well. There is nothing of particular importance about the other completions in Southwest Texas except that 10,000,000 feet of gas in O. W. Killam's No. 2 Cuellar in Zapata County, a few hundred feet from his No. 1 which was supposed to have opened a new oil pool, is somewhat of a disappointment. It is spraying oil and the oil may increase. The sand was at 1,454-65 feet, the same as in No. 1 and the elevation practically the same. A syphon is being put in and the intention is to run the gas to his refinery through the oil pipe line and separate it at the refinery. The spot is about 6 miles south of the original Mirando Valley Pool which is the nearest oil production.

The only completions in the Mirando or Laredo territory for some time have been in the two new pools, the Magnolia-Cole in Survey 412 in Webb County and the Albercas in the SE cor. of Webb County. Last week O. W. Killam completed his No. 23 Bruni in the Albercas Pool and got a 100-bbl. well in sand at 2,184-87 feet. It moves the production line off about 600 feet to the northeast and he has started his No. 24 in between. The south end of the Albercas Pool where Sun Oil Co. gave the field a new start by bringing in its No. B-2 flowing around 1,500 bbls. a day through choke, is still keeping up its record. The Sun Oil Co. completed its No. 3-A Yeager-Strohman, 300 feet south of its No. 1 and flowing 900 bbls. the first 24 hours. No. 1 was but a small well. Resulting from the new production at the south end of the field a number of new locations have been made. The Sun Oil Co. is starting No. 4-A Yeager-Strohman, an east offset to the Rycade Oil Corp.'s No. 1 and is starting its No. 3-B, a north offset to the Rycade well. Also the Magnolia and Sun a little farther north along the same lease line are having a time offsetting each other. Sun Oil Co. has four wells drilling in that area, Magnolia four, O. W. Killam three and Rycade Oil Corp. is completing its No. 1 Yeager-Strohman which is standing 1,800 feet in oil and rising and looking like some kind of a producing well.

Magnolia-Cole Pool

In the Magnolia-Cole Pool in Webb County, Houston Oil Co. completed its No. 3-F Benavides, a 100-bbl. well, and Magnolia Petroleum Co. completed its No. 7 Valdez, a 65-bbl. well. The latter was on the east flank and was about as big as anyone expected it to be. The other well was on the west line of producers there being five other wells on that line. The Magnolia's No. 7 Valdez is 300 feet east of nearest production.

With several wells off production when a gauge was taken last Wednesday the Magnolia-Cole Field made 2,898 bbls. in 24 hours. The Albercas Pool the same day made 2,000 bbls. but all of the Sun Oil Co.'s wells were off temporarily for that day.

Usher Carson tested some gas, some oil and some salt water in a drill stem test of sand at 2,136-42 feet in his No. 5-D Webster in the Carolina-Texas Field. Associated Oil Co. and Carson drilled in No. D-2-A Webster, a little north of Carson's No. 5-D and it was the first oil well in the field. It made a good deal of oil for a time but total recovery to date has been light. It was brought in a couple of years ago and while a little small production was obtained in some other wells at about the same depth around 2,600 feet it failed to make a pool. Carson believes his location on the south may pick it up again. The sand at 2,136-42 looked so good that he stopped and made a test but it is too small and the well is drilling deeper. For some time the Carolina-Texas Field has attracted but little activity. There are no dry holes off to the south in the direction Carson is drilling and he has faith that there is a pool there somewhere. The location is on the southeast edge of the gas production in the field which is coming from several sands.

O. W. Killam is going to make another effort to pick up production on the north edge of the Puig land and a little east of the line of production at the south end of the Los Ojuelos Pool and the north end of the Aviation Pool. There is a little gap in there where production pinches out. Straight Eight Oil Co. went off 1½ miles to the east and got a little oil in a well it drilled at a depth of around 1,800 feet and Edward St. Albans, 1,600 feet north of it, got a small well. The geology of the area seems to warrant some further attempts and Killam will make a location a little west of them and in the direction of the older production.

Another spot in the Laredo country worth watching is the old Charco Redondo Pool. There are 80 or more shallow wells of around 165 to 250 feet total depth producing 2 or 3 bbls. Not much effort has ever been made to drill deep due to lack of transportation. The shallow oil was discovered nearly a score of years ago but no effort made to develop it until a year or more ago the Humble built a 55,000-bbl. tank and has since started a second tank and is storing the oil. Humble's pipe line is now within 15 miles of the field. W. R. Duke has started punching holes in the country to depths below the shallow stuff and his first was a small gasser at around 975 feet and his second is a 15,000,000 to 20,000,000-foot gasser at that depth. It bears about the same relation to the Reynosa Escarpment that other production in the Mirando area has.

Zavala County

Tritex Oil Co., which is trying to develop a gas field in northern Zavala County and with plans for 200 miles of gas pipe line to supply five counties between San Antonio and the Rio Grande is completing its No. 3 West. Nos. 1 and 2 at around 800 feet were good little gas wells of 3,000,000 to 4,000,000 feet. No. 3 which is 2 miles west of No. 1 with No 2 located midway between them, looks like it would make considerably more and may make 12,000,000 feet. The company has enough territory proven up to supply the territory it proposes to serve.

Joe Bruner Field

In the Joe Bruner Field in Caldwell County, just north of the town of Luling, some additional wells are now on the pump but the new wells are not showing up quite as good as No. 1 Wilson of the Golden West Oil Co. which was the first well in the field to be given a big shot. Sun Oil Co.'s No. 1 Malone, three locations northeast of this, is finding the Austin formation very hard and it does not look as though it would be a very big well. Golden West's No. 1 Wilson started off big after being shot with 1½ quarts to the foot of formation and pumped for some days 250 bbls. The first 47 days' pipe line runs averaged 200 bbls. even though there were some days it was off production. The first 15 days of September it and the company's No. 2 Wilson averaged 228 bbls. daily, with some delays and time off due to rods parting and other troubles. Operators believe yet they may not know all they ought to know about shooting this formation, this being the first production of any consequence in the Austin in Southwest Texas. Lutex Oil, Inc.'s discovery well, No. 1 Davis, is on the pump but thus far is not as good as the Golden West's No. 1 Wilson. T. C. Hadley's No. 1 Tiller, more than a mile to the northeast, had an excellent core. It was given a fairly large shot and is cleaning out but should be on the pump and with some gauges as to production this week. It was going on the pump early last week.

Four miles south of Lockhart and 8 miles north of the Joe Bruner Field where Doctor Bute and The Texas Company brought in their No. 2 Branyon four or five months ago and which to this time is the only producer in the field, The Texas Company has drilled in No. 3 Branyon located southeast of No. 2 a little over one location. It bailed a little oil and showed a little gas and the company may try to shoot it. It is not a well as it stands. Depth is 2,354 feet, same as in No. 2. The other attempts to make a field in that area were all to the northeast and southwest of the discovery well.

COMPLETIONS

Bexar County

Schimmel Production Corp.'s No. 23 Kohler, Block 265, J. Wilson Survey, Somerset Field, completed at 1,345 feet is 11-bbl. well.

Caldwell County

Roxana Petroleum Corp.'s No. 3 Ed Starcke, Cornelius Crenshaw Survey, Roxana Field, completed at 1,322 feet, is 40-bbl. well.

Roxana Petroleum Corp.'s No. 1-B Jolly, W. McFarrin Survey, Roxana Field, was completed at 1,297 feet for 117 bbls. initial production.

Magnolia Petroleum Co.'s No. 9 F. M. Mercer, James Berry League, Luling Field, has been completed at 2,196 feet for 20 bbls.

T. C. Hadley's No. 1 Fannie Heise, Gerren Hinds Survey, was completed at 2,675 feet total depth, pumping 30 bbls. of oil.

Guadalupe County

Magnolia Petroleum Co.'s No. 1-B McKean, Harriett Cottle Survey, Luling Field, was completed at 2,150 feet a 20-bbl. well.

Webb County

Magnolia Petroleum Co.'s No. 7 Valdez, Survey 754, Magnolia-Cole Field, was completed at 2,340 feet for 65 bbls.

Houston Oil Co.'s No. 3-F Benavides,

(Continued on Page 113)

HUMBLE AND REITER-FOSTER GET GAS SAND IN DUVAL COUNTY TEST

By B. D. Stevenson

SAN ANTONIO, Tex., Oct. 1—Humble Oil & Refining Co. and Reiter-Foster Oil Co. found a gas sand at 1,858-60 feet in their No. 9 Kohler, 2½ miles southeast of the Kohler Field which they discovered and which to date consists of four rather small producers at around 2,800 feet. No. 9 Kohler is in Survey 164 of Duval County, 135 feet from the south line of the survey and 1,155 feet from the west line of the survey and 8 miles north and a little east of the north end of the Cole gas field. There is a dry hole drilled by Humble, No. 5 Kohler, about a mile southeast of No. 9. Otherwise there is nothing in that area. Simms Oil Co. drilled a gas well in the center of the east half of Survey 666, 5 miles south and a little west of the new wildcat but has never attempted to develop a field as there was no market for the gas. The new Humble-Reiter-Foster well is worth watching as it may indicate the trend of another fold or locate an extension of some that are already known since the Mirando country is a country of folds that extend for many miles. Outside of that it is of little interest to anyone but the Humble Oil & Refining Co. and Reiter-Foster Oil Co. since they own all the acreage around it for considerable distance. No 9 Kohler was given a drill stem test and showed considerable gas. The value of the sand has not yet been determined. Humble has made a location for No. 10 Kohler about a quarter of a mile northwest of No. 9 and in the direction of the four 2,800-foot producing oil wells.

Reiser Gas Area

R. C. Holsworth, geologist who has turned operator, is fishing at 1,450 feet in his No. 1 Wheatley and Marts & Beaven are down below 1,050 feet in their No. 1 Johnson in the old Reiser gas field where shallow gas supplied the city of Laredo for many years till the supply got low. Both Holsworth and Marts & Beavens are trying to find oil. Other wildcats drilled in that area have been encouraged by finding sands carrying some oil.

South of the Alworth Pool in Jim Hogg County, R. V. Hill is waiting for the weather to clear up to test a sand at around 1,000 feet in his No. 2 Ramirez in an area where subsurface geology as shown by other wells he has drilled has encouraged him to keep on hunting. Down in Starr County The Texas Company has made another new location, this one being for No. 1 H. A. Russell, 150 feet from the east and south lines of the most northerly SE cor. of Block 173-A of Porcion 69. It is the only wildcat in Starr County at this time.

Heavy Rains

Heavy rains all through Southwest Texas have slowed up operations very perceptibly during the past week. Roads have been kept impassible by slow steady rains. Machinery moving to location has been stuck in the mud in many places and fuel oil supplies have been cut short resulting in shut downs due to roads being impassable for trucks. These rains have been pretty general all over the San Antonio territory and southwest to the Rio Grande and southeast to the Gulf.

R. E. Phalon has been trying to resume work in his No. 1 Cervanka in Fayette County, south of La Grange, which completed the first contract at 1,808 feet and has been standing some monthhs pending arrangements to deepen. Two gas sands, one at 140 feet and one at 346 feet, have been bubbling up

(Continued on Page 105)

Louisiana-Arkansas to Get Deep Tests

Companies Arrange Co-operative Wells and Will Drill Below Present Producing Horizons. Sarepta and Cotton Valley Get Good Wells

By D. H. Bancroft
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Oct. 1.—Five more tests for deep production, three of them in old producing fields, are in prospect for this division, and four of them have practically been arranged for. Two of those which appear certain will be co-operative tests, as will the fifth, concerning which there is yet some doubt. Southern Crude Oil Purchasing Co. is trying to get other Smackover producers to come in on a 5,000-foot test but the plan has come to no definite stage. Humble Oil & Refining Co. will probably do the drilling on a co-operative well to be drilled in Section 1-14-21, Nevada County, to 4,000 feet unless production is found higher up. A number of wells in Nevada County have been drilled to 2,500-3,000 feet but none to the depth proposed for this well. Location is in the center of production in the Nevada County Field, which cores from around 1,100-1,200 feet.

Smitherman & McDonald have rig up for No. 1 Miller in Section 17-23-8 in the western part of the Haynesville Field and will go to 6,000 feet unless production is found before. This will be the second deep test for Haynesville, the first having been completed January 25 last year by W. R. Ramsey and the Gilliland Oil Co. It was Gilliland's No. 1-D Taylor on the north edge of the field in Section 14-23-8, and pumped 15 bbls. initial from the lower Trinity at 4,529 feet.

In Claiborne Parish, Dixie Oil Co. has rig up for No. 1 Gilbert in Section 27-21-5, in the Lisbon district, which is scheduled to go 4,500-5,000 feet. South of the Homer Field, El Dorado Chief Oil Co. has set 100 feet of 12½-inch surface casing on No. 1 Baker in Section 26-20-7, which is to be a 3,500-foot test.

Sarepta and Cotton Valley

The Sarepta and Cotton Valley districts of Webster Parish led to division in developments in proven territory during the week, Magnolia Petroleum Co.'s No. 1 T. C. Cook in Section 2-22-11 pumping 150 bbls. of clean oil from a total depth of 2,711 feet. This well, in the vicinity of Northwest Louisiana Gas Co.'s No. 7 Pine Woods in Section 33-23-11, indicates possibilities of developing some nice production of light oil. This particular locality has been laying dormant for the last three or four years, existence of oil in commercial quantities being known but better results obtained in Cotton Valley and elsewhere at that time leading development to those fields. Northwest Louisiana Gas Co.'s well is waiting for standard rig to pump from 3,041 feet. Arkansas Natural Gas Co. had a location in Section 35-23-11 for No. 1 L. & A., but will not drill it.

Palmer Corp. did not turn No. 3 Tillman, Section 28-21-10, Cotton Valley, into the lines as a small gasser as reported last week, but drilled past the 2,000,000 feet of gas at 4,554 feet and picked up 12 feet of sand showing a little oil at 4,641-53 feet, set liner and will bail. Magnolia Petroleum Co. has a well flowing 40 bbls. from 4,645 feet in No. 5 Merritt in Section 14-21-10, about a mile west of the deep Trinity discovery well. The Palmer well is between 2 and 3 miles southwest of the discovery. Ohio Oil Co.'s No. 5 Holloway in Section 23-21-10 gauged 4,644,000 feet of gas from 4,712 feet after passing up a blow out estimated at 6,000,000 feet at 4,558 feet. Dixie Oil Co.'s No. 1 Cox in Section 15-21-10, the second deep test to get under way after the discovery, tested dry and was abandoned at 4,714 feet after it had twice been plugged back and shot.

Humble Oil & Refining Co.'s No. 2-A Bodcaw in Section 14-21-10 is the deepest well drilled in Cotton Valley so far. At 5,033 feet it was in sandy lime, four tests since passing the 4,600-foot horizon being dry and one salt water, and while it is still drilling may be abandoned at any time. Magnolia Petroleum Co. tested salt water at 4,800 feet in No. 5 Cox, Section 15-21-10, and is arranging to plug back to around 4,675 feet to retest a show of about 5 bbls. oil at 4,683 feet. Its No. 2 Munn in Section 29-23-9, Shongaloo, tested 2,000,000 feet of gas at 2,690 feet but is making a few feet more hole. Superior Oil Co. of Tulsa has made location 660 feet north and west SE cor. Section 21-21-10 and has rig up for No. 1 McCook & Hibbler.

In the Little Creek Pool of Grant Parish, just south of Urania production in LaSalle, Bailey & Bevil have taken some of the Swope leases surrendered by Gulf Refining Co. some time ago and are drilling No. 3 Swope in Section 17-9-1e, Nos. 1 and 2 having been drilled by the Gulf.

Pipe Line for Union Parish

An outlet for production in the Oakland district of Union Parish, several miles northwest of Monroe gas production, will be available shortly and some development of that district, which was quite active a couple of years ago, may be expected, though all producers drilled there have made large quantities of water with the oil. Carter & Wingfield, the only operators active there at present, have developed 125 bbls. of oil from three wells and have made arrangements with the Lion Oil Refining Corp. for a pipe line. The line will be 9 miles of 4-inch extending to Strong, Ark., where a four-car loading rack is being built. Carter & Wingfield will furnish the materials and the Lion will do the construction work and take the oil, which tests 35 gravity.

An effort by the Lion to obtain a special permit from the Arkansas Conservation Department allowing it to install air lift on two of its wells in Section 15-17-14 as a means of getting rid of water is occupying Champagnolle just at present. A special meeting of the Champagnolle operators' executive committee with Commissioner Taylor was held to consider the matter but no action was taken and the talk in El Dorado is that the permit will be denied. Most of the operators are against the installation of either air or gas lift, claiming that the results reasonably expected to be obtained will not justify the expense. Another session will be held October 8.

Champagnolle

Two fairly good wells were completed in the field during the week, Oilwell Corp.'s No. 2 Slade in Section 3-17-14, on the north edge of production, pumping 125 bbls. of oil with some water from 7 feet of sand, total depth 3,257 feet. In the eastern extension of the shallow sand area, Ohio Oil Co.'s No. 1 Goode, Account 2, in the SW cor. NW NW, Section 6-17-13, pumped 225 bbls. initial, clean oil, from 3 feet of sand, total depth 3,011 feet. Dry holes offset it on the west and south.

Lion Oil Refining Co. has made location in the same part of the district for No. 4 Nash in the SW cor. NE SW, Section 6-17-13, and its No. 5 Rowland in Section 15-17-14, one of the wells it wants to put on the air, is waiting orders with 1,500 feet of fluid, about 80 per cent water, standing in the hole from 3,207 feet. Magnolia Petroleum Co.'s No. 5 Carroll in Section 1-17-14 also is standing 1,500 feet in fluid from 23 feet of broken sand, total depth 3,018 feet, and will be put on the pump; No. 1 Dumas, Section 11-17-14, is full of fluid from 4 feet of sand, total depth 3,228 feet, and is waiting for standard rig. No. 2 Dumas in the SE cor. SW NE of the same section, is a location, the farthest east in the deep sand area of the field. Oilwell Corp. has made location in the NE cor. NW SE Section 9-17-14 for No. 1-A Kelly, three locations east of Reliance Drilling Co.'s big gasser on the same farm. O. W. Estes' No. 5 Rowland in Section 14-17-14, marking the southeast corner of the deep sand area, tested dry from 3,067-87 feet and will go deeper. He has begun work on No. 6 a few feet north of No. 5.

Arkansas Natural Gas Corp. got a nice well in Sligo district of Bossier Parish in No. 4-B Van Hoose, Section 36-16-12, which gauged 15,445,000 feet from a total depth of 2,440 feet in the Elm Grove second sand. In the same district, Palmer Corp. completed No. 1 Jeter, Section 24-17-12, making 1,500,000 feet of gas from the shallow sand at 1,707 feet.

Simplex Oil Co. will not deepen No. 6 Hunsicker, Section 15-20-15, Pine Island district of Caddo, as planned when the well was temporarily abandoned at 2,424 feet in July but has moved off. Natural Gas Producing Co. had the only completion in the Monroe district, No. 1 Patton, in Section 12-20-4, Morehouse Parish, making 5,000,000 feet, total depth 2,194 feet.

Abandon Texas Test

In Panola County, Texas, Hughes and others tested salt water at 2,800 feet and abandoned No. 1 Thompson in the D. Blankenship Survey. Arkansas Natural Gas Corp.'s No. 1 T. C. Adams in the Thomas Cox Survey gauged 2,500,000 feet at 375 pounds from 981 feet and The Texas Company's No. 6 Brumble in the Evans Brackins Survey gauged 616,000 feet at 135 pounds from 976 feet.

J. J. O'Brien's once abandoned No. 17-A Moss, Section 1-14-21, Nevada County, Arkansas, was completed as a 10-bbl. pumper at 1,161 feet. It had stood as a derrick for about a year and then started drilling July 1 and had been shut down waiting for standard rig since July 12. It is understood that O'Brien has sold out to Memphis and St. Louis interests who drilled the well.

Shipments of crude oil from the division fell off 875 bbls. from last week's daily average, the larger part, 705 bbls., was contributed by Champagnolle, although 13 of the 19 pools shared in the decline. That the decline was not greater was due to a gain of 115 bbls. in Caddo light oil aided by smaller increases in DeSoto-Red River, Cotton Valley light and El Dorado runs.

Daily average runs from the division were 123,190 bbls. compared to 124,065 last week, Louisiana pools running 38,865 compared to 38,935 and Arkansas 84,325 compared to 85,130. Daily average runs from the several pools were:

Louisiana	
Caddo light	9,135
Caddo heavy	3,005
Homer	4,225
Haynesville	6,800
DeSoto-Red River	3,920
Elm Grove	625
Bellevue	780
Cotton Valley light	725
Cotton Valley heavy	3,590
Urania	6,640
Pleasant Hill	520
Total	38,865
Arkansas	
El Dorado	5,240
Smackover light	7,305
Smackover heavy	55,375
Stephens	1,025
Nevada County	1,250

(Continued on Page 112)

ASHLEY COUNTY, ARK., WILDCAT IS ABANDONED WHEN IT HITS GRANITE

By D. H. Bancroft

SHREVEPORT, La., Oct. 1.—Outstanding among the week's developments in wildcat activity was the discovery of red granite at 3,167 feet by The Texas Company in its No. 1 Gay, Section 32-16-4, Ashley County, Arkansas. So hard was this rock it wore out a set of cones in making 1-inch of hole and it was only with considerable difficulty that the company was able to get a small core. The test was abandoned but the discovery has not, apparently, had much negative influence on prospects for continued activity in that area. Nor has discovery of the same formation in the same company's No. 1 Hammond in Section 23-17-2, Chicot County, at 3,289 feet, condemned the territory as there is evidence of much faith in the possibilities of the southeast corner of Arkansas. These two wells failed to find the red beds such as are producing in Champagnolle, the bit going out of a chalky material directly under gas rock (believed to be the Monroe formation but barren of any gas here) into the granite. The Texas Company's wells are the third and fourth of the current drilling campaign in southeastern Arkansas to be abandoned as dry holes, the machine "highs" on which the blocks were located not proving productive.

Arkansas Natural Gas Corp.'s No. 1 Tate in Section 4-9-11, Cleveland County, topped the Nacatoch sand at 2,932 feet, took a core to 2,938 feet which showed salt water, and is drilling hard shale at 3,030 feet. The sand was found about 100 feet lower than in a well southwest of it drilled several years ago and was a softer and coarser body. This well may go 4,000 feet unless production is found higher.

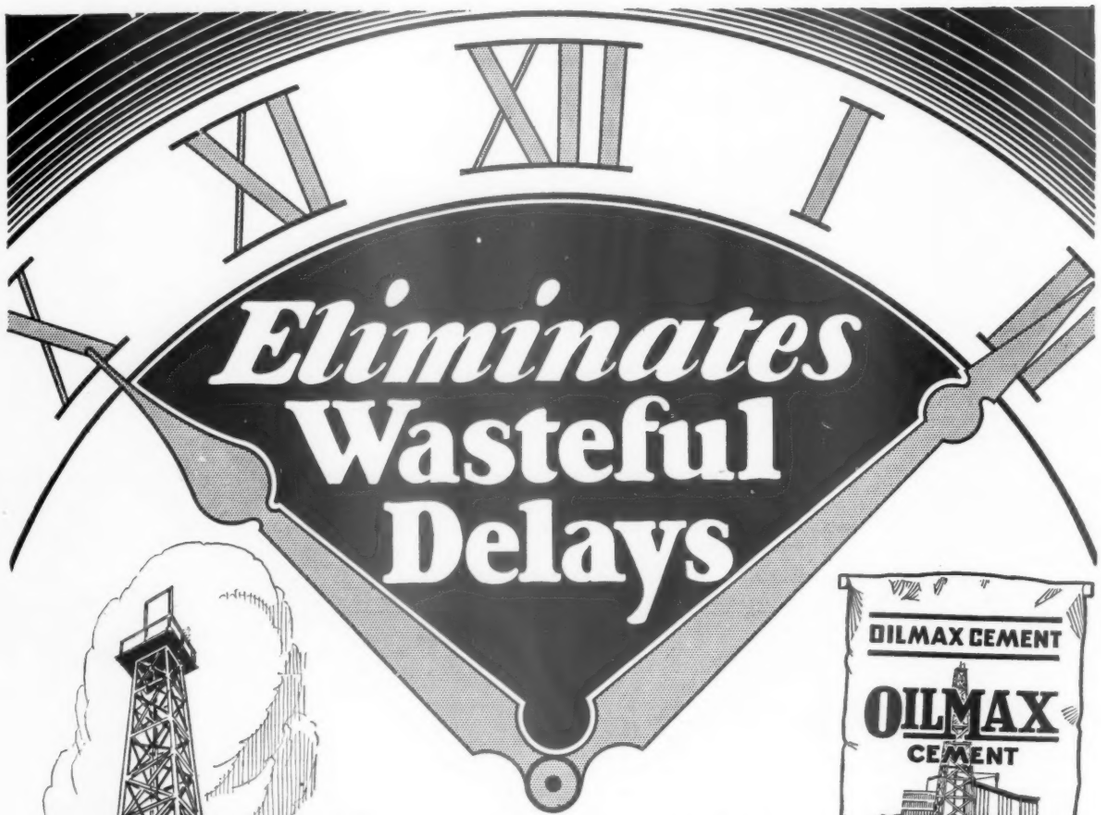
McDonald Brothers' No. 1 Wilson in Section 25-15-18, Ouachita County, about 10 miles east of production in the Louann shallow light oil area of Smackover, has set surface casing and is drilling around 1,500 feet. It is slated to go 3,500 feet unless production is found higher, and if it does turn out to be a deep test will be watched with considerable interest as it will be the first such in that immediate locality. Simmons and others, drilling No. 1 Green in Section 3-16-16, Union County, the heart of Smackover, are reaming for a drill stem test of 5 feet of what some folks in El Dorado think is a new sand at 2,333 feet but probably is not as Smackover has produced hundreds of thousands of barrels of heavy oil from the 2,300-foot horizon.

Abandon Deep Test

Imperial Oil & Gas Products Co. has abandoned its effort to get deep production in No. 1 Goodwin, a semiwildcat in Section 26-17-16, Lisbon district of Union County. The well was abandoned a couple of years ago as a salt water hole at 3,112 feet but when Champagnolle's red bed production came in was deepened to a total of 3,387 feet without testing anything but salt water in between. Now they are arranging to whipstock the 8-inch at 2,100 feet and try to make a well of it from the original Lisbon pay.

E. M. Jones' No. 2-B Stegall in Section 10-18-14, east of the southern end of the old El Dorado East Field is wait-

(Continued on Page 106)



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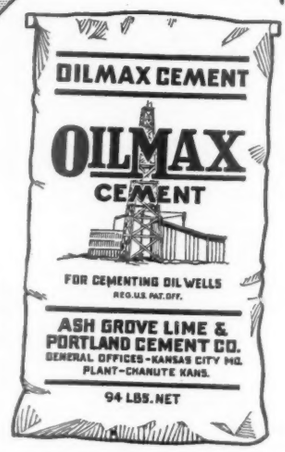
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Good Wells Finished on Coastal Domes

Humble Gets Producer at DeWalt. Rycade Brings in Third Well at Bayou Bouillon, La. Good Completion at Sulphur

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Oct. 1.—Important production extensions at the DeWalt, Bayou Bouillon and Sulphur Domes featured Gulf Coast developments the past week. These with another 2,500-bbl. inside well at Hull and other smaller completions added approximately 11,000 bbls. of new flush production to coastal fields, the biggest addition of new oil in months. As the good wells at DeWalt, Bouillon and Sulphur were not brought in until late in the week, this flush production was not reflected noticeably in the daily average production.

At DeWalt, Humble Oil & Refining Co.'s No. 3 Sugarland came in late Friday night flowing an estimated 3,000 bbls., which settled down on the gauge to approximately 2,750 bbls. through a quarter-inch choke. This well, the third and best so far at DeWalt marked an extension of approximately 1,400 feet northwest of the discovery well, which came in the latter part of March flowing 1,000 bbls., and which at present is making between 150 and 200 bbls.

The new well is producing from a sandy shale at a total depth of 3,706 feet with 119 feet of 4½-inch strainer set. The oil tests 27.8 gravity, or approximately a degree higher than in the discovery well. The latter found the pay at a shallower depth of 3,536 feet. The new well might indicate a trend of production to the northwest as the second well, No. 2 Sugarland, which is to the east, made only a small producer, and a well on the south was a dry gasser.

Bayou Bouillon

Bayou Bouillon, St. Martin Parish, La., another new salt dome field, got its third producer when Rycade Oil Corp. brought in its No. 2 State flowing on the gauge 103 bbls. hourly the first three hours, and which since has been making around 1,900 bbls. daily. This well extends production of that dome 200 feet to the northwest of the discovery well, which came in last April making an estimated 4,000 bbls. daily.

Rycade's well is producing from a sand at a total depth of 3,107 feet and the oil tests 30 gravity. The discovery well, No. 2 Atchafalaya fee, is still flowing, its pay being at approximately the same level, 3,044 feet. No. 2 State is in the river. Two new locations have been made already, these being on the bank of the river. Bayou Bouillon is one of the several fields in southern Louisiana, which can be reached only by boat.

At Sulphur Dome, Calcasieu Parish, Louisiana, Union Sulphur Co. completed another good well in its No. 732 fee, which came in flowing 2,000 bbls. daily of pipe line oil from sand at 3,230-52 feet. It is one of a string of good wells which the Union Sulphur Co. is moving down along the west flank of the dome. This also is a comparatively new dome as far as oil production is concerned.

Each of these fields is virtually controlled by the individual companies mentioned, although at DeWalt several scattered small tracts are held by the Gulf Production Co. and one by Roxana Petroleum Corp. One 10-acre tract at DeWalt lies to the northwest in a tract adjoining that of the Sugarland Industries, Inc., on which Humble has obtained its production. A further extension to the northwest of Humble possibly would necessitate an offset by Gulf, which would start the first competitive drilling in this field.

Republic Production Co. completed another 2,500-bbl. well at Hull, Liberty County, in its No. 86 Dolbear. This well, a former shallow producer, was deepened to a lower sand around 2,527 feet, but is of little significance as it is in the heart of similar production.

At Liberty, Yount Lee Oil Co. put its No. 9 Mitchell, on the north edge of production, on the pump for 60 bbls. daily. Liberty Petroleum Co.'s No. 1 Turner, which is considerably north of production in the vicinity of the small production spot found last spring by The Texas Company a mile north of the Liberty Field, flowed a little oil by heads and now is figured as good for about 10 bbls. daily.

Sinclair Oil & Gas Co.'s No. 2 Davison, on the east flank of the Blue Ridge Field, Fort Bend County, came in early in the week flowing 700 bbls. daily from sand at 3 393 feet. Gulf Production Co.'s No. 1 Perry, Pierce Junction, flowed 100 bbls., 50 per cent water, from a deep sand at 5,459 feet. Yount Lee Oil Co.'s No. 9 fee, Spindletop, another old well deepened, flowed 550 bbls. of pipe line oil at 5,050 feet. The Texas Company's No. 22 Koehler, a deepened well at Humble, was put on the pump for 325 bbls., producing from sand at 3,100 feet. Batson Oil Co.'s No. 10 Donoho & Cashen, Batson, made a 20-bbl. pumper at 1,147 feet, and at Vinton, Calcasieu Parish, La., Vinton Petroleum Co.'s No. 15 Harmony, pumped 15 bbls. daily at 2,119 feet.

The Texas Company's No. 277 fee, a former producer of Sour Lake, was deepened to 2,310 feet, but made only a small amount of dry gas which will be used as fuel.

Abandonments

Abandonments during the week included: Gulf Refining Co.'s No. 9 United Land Co., Sorrento Dome, Ascension Parish, gypsum, 2,702 feet; Noble Oil & Gas Co.'s No. 2 Ellender, Hackberry, Cameron Parish, heaving shale, 5 079 feet; Rycade Oil Corp.'s No. 1 Martin, Bayou Bouillon, junked hole, 4,-883 feet; Navarro Oil Co.'s No. 12 Dooley, Pierce Junction, cap rock, 1,016 feet; Fort Bend Oil Co.'s No. 1-C Blakely (Tract E), salt, 600 feet; Rycade Oil Corp.'s No. 10 Wisdom, Nash, salt, 4,682 feet; Eunice & Carpenter's No. 1 Coplin, Sour Lake, salt, 4,098 feet; Miller and associates' No. 1 Plumb, Boling, tested salt water, 703 feet (temporarily abandoned); Yount Lee Oil Co.'s No. 2 Crowley, Jennings, Acadia Parish, junked hole, 5 712 feet; Union Sulphur Co.'s No. 721 fee, Sulphur, 3,523 feet (temporarily abandoned).

Considerable leasing interest continues to be centered on the Anahuac district, Chambers County, on the east side of Galveston Bay, where two new domes are reported to have been discovered recently. Trading has been active both north of Anahuac, near Hankamer, and also to the south near Smith's Point. One of these purported domes is supposed to lie in the bay itself.

A transaction of some size was recorded in Cameron Parish, La., with the purchase by Yount Lee Oil Co. of Beaumont, Tex., of approximately 11,000 acres along Johnson Bayou, in the western part of the parish just across Sabine Lake from Jefferson County, Texas. The Sabine Lake district and along its tributary, the Neches River, has figured in lease deals in the past several weeks as the result of reported geophysical discoveries.

Scattered leasing of smaller tracts also is active in Orange County in the district, Gulf Production Co. and Roxana Petroleum Corp. being among the chief buyers the past week.

Although daily average production for the week did not reflect any important increase, new flush production added, unless offset by substantial decreases in other fields, probably will cause a material boost in figures the coming week.

Daily Average Production

Daily average production of the Gulf Coast and Southwest Texas fields for the week ending September 29 follows:

GULF COAST

Texas

Allen Dome	8
Barbers Hill	650
Batson	1,371
Big Creek	3,438
Blue Ridge	8,023
Brenham	145
Boling	1,669
Damon Mound	640
DeWalt	296
Fannette	51
Goose Creek	6,560
High Island	826
Hull	12,846
Humble	3,043
Markham	300
Nash Dome	1,150
North Dayton	1,650
Orange	3,786
Orchard	122
Pierce Junction	10,890
Raccoon Bend	500
Saratoga	1,037
Sour Lake	3,366
South Liberty and South Dayton	3,551
Spindletop	39,100
West Columbia	7,411
Total this week	111,623
Total last week	109,208
Increase	2,415

South Louisiana

Anse La Butte	55
Atchafalaya	1,320
East Hackberry	2,535
Edgerly	983
Evangeline	947
Lockport	3,009
Sorrento	1,042
Starks	1,846
Sulphur	2,575
Sweet Lake	2,600
Vinton	4,210
Total this week	21,122
Total last week	21,734
Decrease	612
Total Gulf Coast	132,745
Total last week	130,942
Increase	1,803

SOUTHWEST TEXAS

Dale	904
Kingsville	300
Luling	13,935
Lytton Springs	1,212
Somerset	2,002
Miscellaneous	10,580
Total this week	28,933
Total last week	28,564
Increase	369

Boling—Wharton and Fort Bend

Vacuum Oil Co.'s No. 1 Taylor, southwest side of Boling in Wharton County, struck a pocket of gas which blew out and caught fire destroying the derrick foundation. Two men were seriously burned in the blaze. The test was completed several weeks ago at 2,936 feet, but had been deepened a few feet in the sand and was setting screen for another test. On the east flank, Gulf Production Co. has a rig up for No. 2 E. C. Farmer and Sun Oil Co one for No. 4 E. C. Farmer. The latter's No. 8 J. R. Farmer is in cap at 2,810-20 feet. The Texas Company's No. 1 Bushnell is drilling sticky shale at 3,577 feet.

Spindletop—Jefferson County

Activity at Spindletop the past week

(Continued on Page 97)

OIL PRODUCTION AT NEW DEPTH SURPRISE IN MUSKEGON FIELD

By Special Correspondent

MUSKEGON, Mich., Sept. 29.—Although there were but four completions in the Muskegon Field during the past week, there were a number of important and interesting developments.

The Dundee Oil & Gas Co.'s No. 1 Cihak, NW NE, Section 8-10-16, provided one of the greatest surprises of the week when it came in making heads of from 20 to 40 bbls. a day for several days in succession from the new depth of 1,900 feet. The well made an average of 30 bbls. a day for the first four days and has now been tubed and will be pumped.

The Consolidated Oil Co.'s No. 1 Host, SE SE, Section 5-10-16, was a new gasser. It came in in the Dundee formation at 2,045 feet with an initial open flow gauged at 16,500,000 feet a day. It is within a few hundred feet of several other gassers of similar size in Section 5, Muskegon Township.

The Puritan Oil Co.'s No. 1 Overkamp, SE SE, Section 7-10-16, also was a surprise in the Traverse formation. It came in at 1,658 feet and flowed over the top of the derrick. It swabbed about 70 bbls. a day for two days and may steady down to a 50-bbl. pumper.

The Johnson Oil Refining Co.'s No. 1 L. Heinz, SW NE, Section 9, came in at 1,638 feet. It was shot to make a 30-bbl. pumper in the Traverse formation.

Carl Prather's No. 1 Thompson wildcat in Laketon Township, SW NW, Section 12-10-17, was drilled about 3 feet deeper into the Dundee formation with an increase to about 3,000,000 feet of gas a day but no increase over 250 bbls. of oil a day. Three offsets to this well which has opened an entirely new territory about 3 miles west of the original proven field have been announced as started.

The Reed Oil Co. was the first to move in a rig for the No. 1 L. Young, SE NE, Section 11-10-17. Two other new locations were: Lima Oil Corp.'s No. 1 Shuler, NW NW, Section 12-10-17, and Ohio Oil Co.'s No. 1 Gates, NE NE, Section 11. The Johnson Oil Refining Co. and other companies also are planning to drill in the new area. Price of leases has advanced from $200 to $400 per acre.

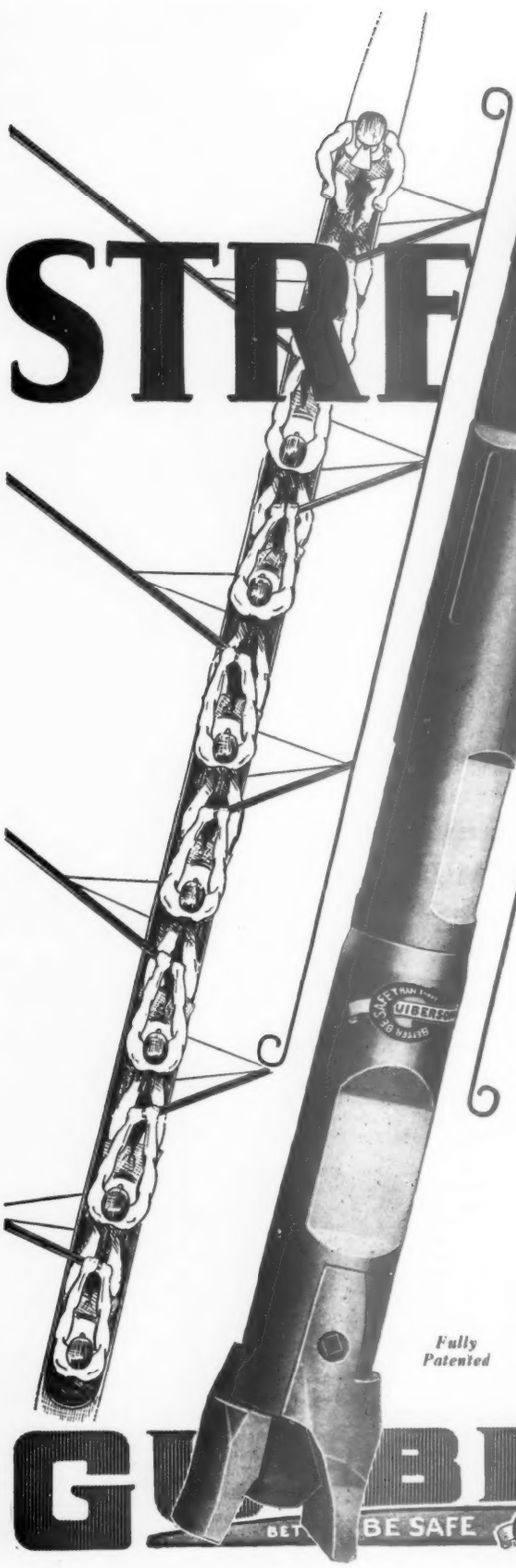
Eight wells are moving in rigs or spudding: Muskegon Oil Corp.'s No. 1 Becker, NW SW, Section 4-10-16; Muskegon Oil Corp.'s No. 3 Reeths, SW SW, Section 4-10-16; Section Ten Oil Co.'s No. 1 McDermott, SW SW, Section 10-10-16; Shoup Oil & Gas Co.'s No. 3 Shoup, NW NW, Section 8-10-16; Joliet-Morris Development Co.'s No. 1 DeVries, SW NE, Section 8-10-16; Puritan Oil Co.'s No. 1 Burns, SE SE, Section 5-10-16; Cedar Creek Oil & Gas Co.'s No. 1 Fagan, SW NW, Section 10-10-16; and the Dixie Oil Co.'s No. 1 Dirkes, NW NE, Section 9-10-16.

New locations announced this week are: C. A. Welch's No. 1 Fagan, NW NW, Section 10-10-16; Kelley Goldboss' No. 3 Burns, SE SE, Section 5-10-16; and C. M. Bowers' No. 2 Hower, SE SE, Section 5-10-16.

Four wildcats near Muskegon are progressing at different stages and the announcement was made today that a fifth would be drilled. S. B. Ridenour's No. 1 Antisdale, SE SE, Section 2-9-16, Norton Township, is drilling at about 1,900 feet on the way to the Dundee formation. It was dry in the Traverse.

The Fink Development Syndicate's No.

(Continued on Page 131)



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BE SAFE THAN SORRY

New Mexico Well Makes 430 Barrels

Getty Oil Corp.'s Producer in Eddy County Best Completion in Long Time. Park County, Wyoming, Becoming Active

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER COLO, Oct. 1.—Since E. H. Rosenberg & Co. completed their discovery well on the Frannie anticline, in Park County, in the northern portion of Wyoming, there has been a great deal of new work done in this district. Rosenberg's well has been tubed with 1,000 feet of 2-inch tubing which is set with a packer and the well has been flowing at the rate of 100 to 125 bbls. of clean pipe line oil daily. A new operation in Park County is that of the Oregon-Wyoming Oil & Gas Co. on what is known as the Horse Center structure, immediately west of the Oregon Basin Field. It is the plan of the operators of this well to test the black oil series at approximately 1,600 feet. The Alkali Butte discovery well of the Texas Production Co., in Fremont County, of central Wyoming, will probably be deepened to test out the underlying Dakota. The well recently flowed at the rate of 600 bbls. per day when opened up for a short time. During the week the lost tools were blown from the hole by built-up gas pressure in the Producers & Refiners Corp.'s No. 1 on the Muskrat structure, a few miles east of Alkali Butte. Several strings of tools had been lost in the hole and, while fishing, the gas, coming from the Frontier horizon, headed up with sufficient force to blow the tools from the hole. The well will be deepened.

Good Well in New Mexico

The feature of New Mexico oil development of the week was in the Twin Hills area of Eddy County, in the southeastern portion of the State where the Getty Oil Corp. has a completion in their No. 3 Rawson. The well is by far the best completion so far recorded and made 430 bbls. on a 24-hour swabbing test. The Midwest Refining Co.'s test on the Hobbs high is still standing shut in at 4,203 feet. The well, as it stands, is a good producer and indicates that the Midwest has opened up a new area of oil production. Preparations are being made to start a new test on the Red Mesa structure in San Juan County, in the northwestern portion of the State. The new operation is that of the Royal Producers & Royalty Co., located in Section 27-33n-12w. The most active area in northwestern New Mexico is the Kutz Canon district. One new location has been made and three wells are drilling.

Colorado and Utah

There were no developments of interest or importance in Colorado or Utah during the week. In the southern portion of Colorado, in Archuleta County, the Juanita Oil Co. picked up a small show of shale oil at approximately 500 feet in its test of the Juanita structure. Preparations are being made to resume the test of the Transcontinental Oil Co. on the Glade anticline, in Dolores County. This well has been shut down at 3,802 feet for a considerable period. Preparations are, likewise, being made to resume the test started by the Peerless Oil Corp. on the High Line structure in Mesa County, just east of the Colorado-Utah line. The Peerless carried this well to a total depth of 2,058 feet with rotary equipment. East of the front range, near Fort Morgan, in Morgan County, the Badger Creek Oil & Gas Corp., drilling on the Fort Morgan anticline, is fishing for lost tools in the Pierre at approximately 800 feet.

On the Cane Creek structure, south of Moab, Grand County, in southeastern Utah, theh joint test of the Utah Southern-Moab Consolidated which has reached a depth of 2,005 feet, is running and mudding 8¼-inch casing. This well is estimated to be only a short distance above the objective horizon and all precautions are being taken to have the hole in shape when the objective is reached. Continental Oil Co. is making some headway in sidetracking tools on the Boundary Butte structure, in San Juan County, in the southern portion of the State. The total depth of the well is 4,047 feet, and the tools are lodged in the hole at 3,680 feet. This well has been fishing for almost five months.

Wyoming

A test has recently been started on the Horse Center structure in the northern part of Wyoming, in Park County. This well is being drilled by the Oregon-Wyoming Oil & Gas Co. and is located in the SE NW, Section 30-51-101. The well is making hole at 276 feet. The objectives of the test are the black oil series, expected at around 1,600 feet. Horse Center is located in close proximity to the important Oregon Basin Field and there is no question but what the well will be watched with interest.

Considerable interest is being shown in northern Wyoming at this time and many black oil prospects, both in northern Wyoming and southern Montana, are being investigated by major companies as well as individual operators. This revival of interest can be directly traced to a discovery, several weeks ago, of a high grade black oil on the Frannie structure close to the Montana-Wyoming state line in Park County. This well, bottomed at 2,600 feet, was drilled by E. H. Rosenberg & Co. and is located in the NW NW, Section 25-58n-98w. The well has been shut in for some time while additional tankage is being erected and a pipe line laid to the railroad. It has been tubed with 1,000 feet of 2-inch tubing which is set with a packer and the well has been flowing at the rate of 100 to 125 bbls. of clean pipe line oil daily. The oil tests 28 degrees Baume and has a gasoline content reported to be 23 per cent. The owners of the well, E. H. Rosenberg & Co., are reported to have made two new locations on the structure, one of which will be near the center of the anticline and the other south and a little east of the discovery well.

To Deepen Producer

Although the Alkali Butte well of the Texas Production Co., in Fremont County, CSL SE NW, Section 1-33n-95w, is considered a commercial producer as it stands at a total depth of 4,005 feet, it is the plan of the Texas Production Co. to carry this well deeper in order to explore the lower sands and to determine, if possible, the horizon from which the present production is coming. It is generally believed that the oil is being produced from the Muddy sand, but as this is the first well on the structure, the operators feel that it should be carried down to test the Lakota. The well has been shut in for lack of storage but the oil is now being trucked to the rail head at Riverton on trucks equipped with tanks and the well, when recently opened up, flowed at the rate of 600 bbls. per day.

A few miles east of Alkali Butte, the Producers & Refiners Corp.'s No. 1, on the Muskrat structure, located in the NW cor. SE SE, Section 34-34n-92w, Fremont County, attracted considerable attention when the lost tools were blown from the hole while efforts were being made to recover. The tools were lost some time ago when the well developed a flow of gas in the top of the first Frontier, estimated at 10,000,000 feet, and since that time all efforts to recover have met with failure. Fishing was in progress when the gas built up a sufficient head to blow the lost tools and fishing string out of the hole, wrecking the rig. As soon as the rig can be repaired, efforts will be made to deepen this well to test the lower sands of the Frontier.

New Mexico

The Getty Oil Co. has a completion in its No. 3 Rawson, SE SW, Section 13-20s-29e. This well is in the Twin Hills, or Getty Field, of Eddy County, and is by far the best completion in the field. The well was drilled 1 foot in the sand found at 1,396 feet and on a 24-hour swabbing test the well made 430 bbls. of 21.7 gravity oil. There is no pipe line to the Getty Field and the well will be shut in.

Practically all of the wells which are at important depths in southeastern New Mexico have been making slow progress. The Marland Production Co.'s No. 1 Lynn, C Section 26-23s-36e, north of the same company's No. 1 Sholes, still continues to look promising although no new hole has recently been made. The 8¼-inch casing has been recemented at 2,849 feet. According to reports the well appears to be running from 40 to 50 feet higher than No. 1 Sholes. The top of the salt in No. 1 Lynn was found at 2,770 feet and the top of the brown lime at 2,800 feet.

There seems to be little doubt but what the Midwest Refining Co. has opened up a new area of production in its No. 1 State, on Hobbs high in eastern Lea County, NE NE, Section 9-19s-38e. The well is shut down at 4,203 feet and all available storage has been filled.

The Empire Gas & Fuel Co.'s No. 1 State is on production and is making approximately 150 bbls. of oil per day. There is from 50 to 75 bbls. of water with the oil. The well is located in the NE NE NW, Section 8-21s-35e, and is bottomed at a total depth of 3,834 feet.

Marland to Start Four Tests

The Marland Production Co. is making preparations to start four new wells, the locations of which were made some time ago. These locations include No. 1 Meyer, SW NW, Section 26-20s-37e, digging pit; No. 1 Warren, SE SW, Section 28-20s-38e, moving in material; No. 1 Lockhart, NE NW, Section 31-21s-36e, spudding, and No. 1 Slattery, NW SE. Section 7-22s-35e, rigging up.

In the northwestern part of the State, in San Juan County, the Royal Producers & Royalty Co. is moving in material for a new test of the Red Mesa structure. The location of the well is in Section 27-33n-12w, about 2½ miles east of the town of Marvel and halfway between the old Leidecker and Erdman wells. Both of these wells, drilled some years ago, developed encouraging shows of oil. The well will test all sands through the Hospah, Dakota and Sundance. Contract has been let to Frank

(Continued on Page 131)

FAIR PRODUCER OF LIGHT CRUDE TO SOUTHWEST OF CALGARY

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Sept. 29.—In the Turner Valley Field southwest of Calgary, Royalite Oil Co.'s No. 15, LSD 1, Section 12-20-3w5, has got what looks like a fair commercial production of light crude in the Dakota-Blairmore horizon at 2,390 feet. A two days' production test is reported to have indicated a yield of around 50 bbls. a day or better. A pump is being installed, and the well will be pumped from this horizon as long as the production justifies, and later, probably, carried to the deep lime. The location is just across the trail from McLeod Oil Co.'s No. 1 and 2, and midway between them.

Royalite Oil Co.'s No. 9, LSD 6, Section 13-20-3w5, is reported to have discontinued drilling at around 5,425 feet and is being put on the separator. At this depth the test was approximately 575 feet in the Madison lime. Considerable gas has been met in the lime, but not sufficient to make the well a commercial producer. At around 5,423 feet, considerable additional wet gas was met, and it is unofficially reported the well is making close to 10,000,000 feet a day, with a potential crude naphtha recovery of 100 bbls. or better. The well has been filled with solution while drilling was carried on, and when cleaned out and put on the separator it may justify finishing at this depth. It is considerably deeper in the lime than most of the other crude naphtha producers.

Foothills Oil & Gas Co.'s No. 1, SW Section 26-20-3w5, is reported drilling in the Madison lime at 5,485 feet, with between 2,000,000 and 3,000,000 feet of wet gas, and is expected to show a satisfactory crude naphtha recovery at a normal depth in the lime. This is the first deep test in the north end of the field to enter the deep lime, and if commercial production develops, it will prove a considerable additional area of the field toward the north. Until the present, all the crude naphtha producers from the deep lime have been in the central section of the field.

Imperial Oil Tests

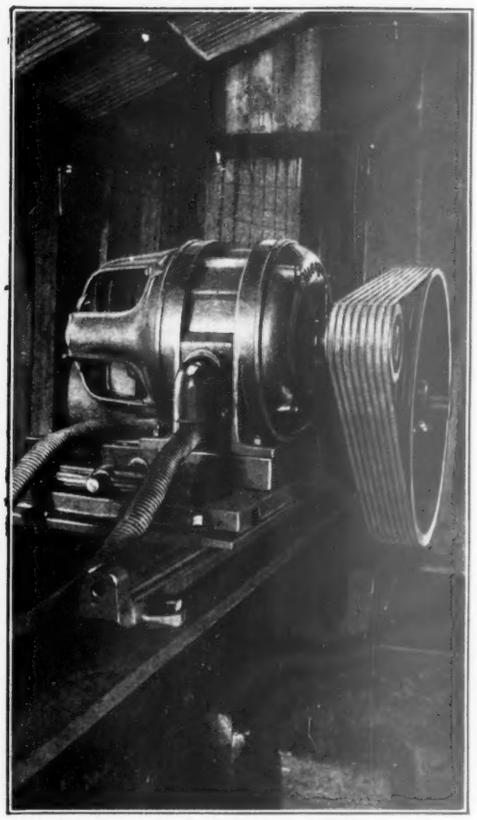
Royalite Oil Co.'s No. 14, LSD 4, Section 7-20-2w5, which got the deep lime at the unusually high point of 3,220 feet, has casing cemented and is waiting for a diamond drill outfit to drill into the lime. Royalite's No. 16, LSD 2, Section 12-20-3w5, is at 3,425 feet and changing to a rotary outfit. Royalite's No. 22, Section 13-20-3w5, which is putting down a hole to the Blairmore-Dakota to provide gas storage, is working on a bad hole at 1,510 feet. The status of other tests of the Imperial Oil, Ltd., group is as follows:

Test—	LSD	Section	Depth
Royalite No. 12	3	13-20-3w5	*2,332
Royalite No. 13	6	13-20-3w5	*3,206
Royalite No. 17	13	6-20-2w5	*3,190
Royalite No. 18	15	12-20-3w5	*2,040
Royalite No. 19	5	6-20-2w5	†1,992
Dalhousie No. 6	10	13-20-3w5	*5,455
Home Oil Co. No. 1	10	20-19-2w5	*4,811
Home No. 3	14	20-19-2w5	*3,217
Northwest Associated	6	20-19-2w5	‡200

*Drilling. †Fishing. ‡Cemented.

Dalhousie's No. 6 is a considerable distance in the deep lime. Foothills Oil & Gas Co.'s No. 2, LSD 8, Section 1-20-3w5, is rerunning 10-inch casing. This test had some light crude production in

(Continued on Page 110)



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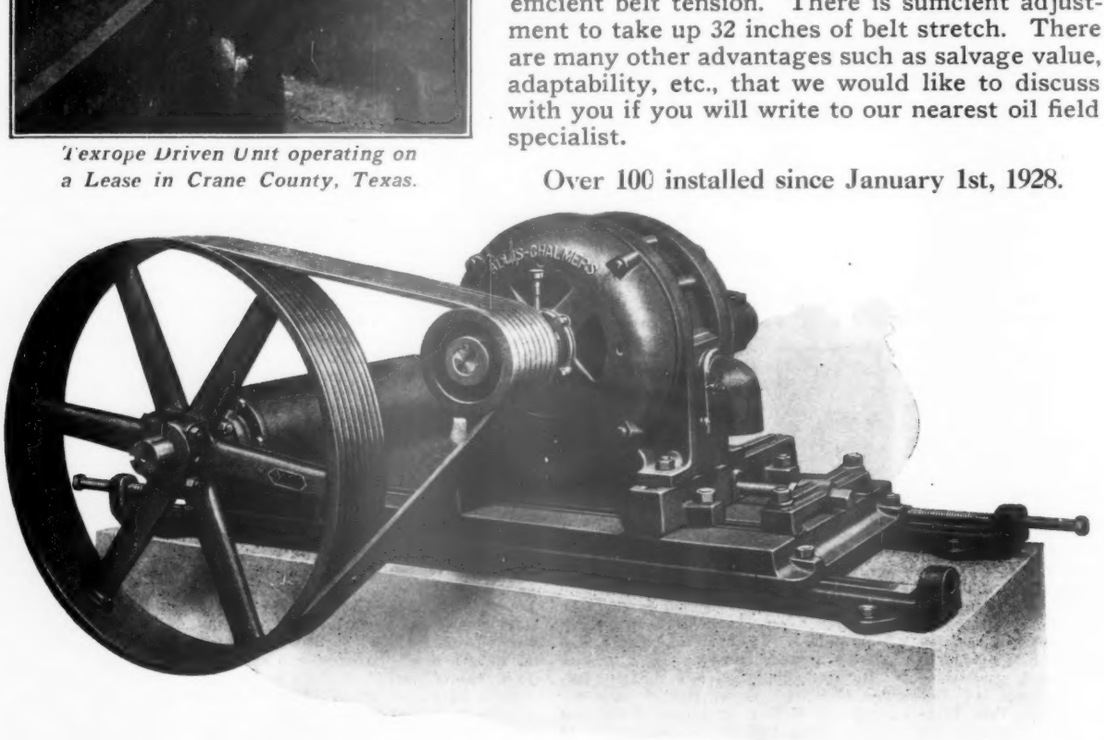

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California Gain Expected in November

Completions in Deep Zone at Santa Fe Springs Will Reverse Present Production Trend. Curtailment Important

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Sept. 29.—Although California's production has shown a definite downward trend since the first week in July and will continue to decline for another 30 days, production curves will show a very pronounced upswing during November and December due to deep-zone completions in the Santa Fe Springs Field of Los Angeles Basin where the Buckbee horizon is under intense development. The new year will be ushered in with a rising production in contrast with conditions existing at the beginning of last January, and unless the output at Santa Fe Springs is prorated or pinched in production may register a very substantial gain early in 1929.

The State's production did not register any great fluctuation during 1928 due to curtailment in several fields and although the accompanying chart only shows a range of 40,000 bbls. daily between the high and low for the past 12 months a similar graph made this time next year will probably show several violent fluctuations. Long Beach will probably continue to show a normal decline from week to week during the next 90 days but the anticipated drop in production of this field will only be of a minor consequence when compared with the deep-zone possibilities at Santa Fe Springs. Elwood Terrace, Ventura Avenue, Potrero and Midway-Sunset should also have a tendency to increase production and offset the output of any fields which are scheduled to continue showing a normal decline.

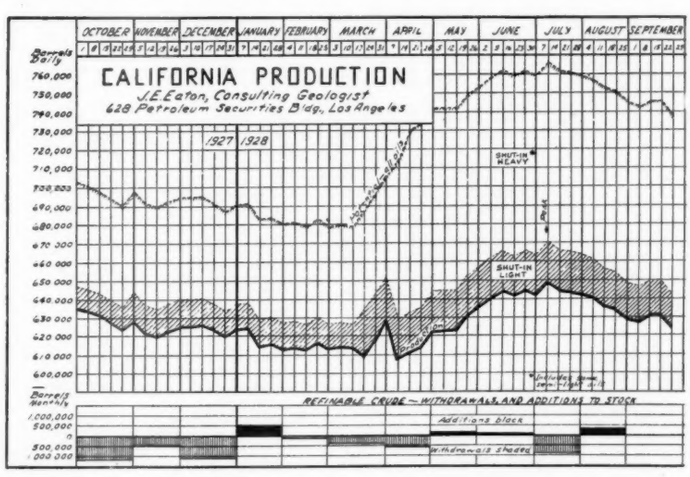
Production in California at the present time is within 10,000 bbls. per day of the year's low point established in April but it must be remembered that this is an artificial condition resulting from an additional curtailment in production. A total of 124,000 bbls. per day is shut in at present, as compared with a maximum curtailment of 79,000 bbls. daily during January, 1928. As the situation stands at the present time Long Beach is the only field in the State which can be expected to show any appreciable decline during the next 90 days as all of the other districts are either in the ascendency or have already reached their settled production.

Midway-Sunset

It is quite evident from recent developements that the Midway-Sunset Field of Kern County is destined to play an important part in the production situation in California during the coming year unless production and drilling operations are curtailed. The Union Oil Co. is scheduled to make an early production test of No. 1 Western Pacific, which is standing cemented in an untried oil zone in Section 27-32-23, and if substantial production is ultimately developed a considerable amount of drilling may possibly get under way on adjoining acreage. Definite information is lacking as to the exact status of this well but in view of the prevailing secrecy this hole may bear watching, especially in view of the fact that it is located over 2,000 feet from production.

The Republic Petroleum Co. has concluded drilling operations on its No. 32 in Section 8-32-23 and this well, located approximately 3 miles northwest of the Union's No. 1 Western Pacific, has all the earmarks of resulting in substantial production. Over 1,000 feet of oil-bearing formation has already been opened up and from present indications at 3,605 feet this project may come in doing around 3,000 bbls. initially. The Republic's No. 31 in Section 7-32-23 is also in the oil sand and while it would undoubtedly result in at least a 1,000-bbl. well from its present depth, 2,715 feet, it will probably be carried down and take advantage of a penetration equal to that secured in No. 32. It has been showing a very heavy gas pressure for more than a week and the crew found it necessary to pump in five tons of heavy mud to keep it under control a few days ago.

The North American Consolidated is working on an exceptionally interesting drilling project in Section 16-32-23 because if this well results in commercial production it will automatically throw open considerable acreage for development. If the sand picked up by the Union in Section 27-32-23 is subsequently found to be the same sand encountered in the Republic and Chanslor-Canfield Midway Oil Co.'s wells 3 miles northwest, this will be the most important development of the year in this part of the State as it will probably precipitate a general drilling campaign. The importance of the North American's test in Section 16-32-23 is quite obvious as this well is located about midway between the two areas and it will definitely determine whether one or two oil zones have been encountered. The Chanslor-Canfield Midway Oil Co. successfully finished a new well in the Republic zone during the early part of the week when No. 84 in Section 8-32-23 was brought in under a natural flow doing 1,620 bbls. of relatively clean 22.3 gravity oil daily from a depth of 2,900 feet, the hole having been finished with an 8⅝-inch oil string.



Long Beach

There were no developments of special importance in the Long Beach Field during the past week although operators are beginning to appreciate the deep zone possibilities of the Los Cerritos or northwest extension which was recently thrown open for development when the Umpire Oil Co. finished its No. 41 doing 750 bbls. from 6,546 feet. Several new wells have already gotten under way and preparations are being made to anticipate an intensive drilling campaign as soon as another satisfactory producer has been finished. The Petroleum Securities is starting two new wells on the Nelson lease north of Patterson and east of Atlantic Avenue and while both of them are rank outposts at the present time they may ultimately succeed in developing production. G. A. Langstaff's No. 1 Bixby, located in the extreme southwestern end of the field and considerably south of the Los Cerritos extension, is rotating ahead in a sandy shale at 6,090 feet and while there have been no showings logged up to the present time this well still has at least another 1,000 feet to go before being classed as doubtful.

The State Co. recemented No. 1 Bradbury, its deep well in the Long Beach Field, a few days ago and this project, the first to be finished in any California field in an oil sand below the 8,000-foot level, will be given another production test in the near future. Considerable difficulty has been experienced in effecting a satisfactory cement job due to the extreme depth of the hole. The company was unable to force any cement through the perforations at 7,780 feet on its first attempt but a check indicates that 12 sacks have just been successfully forced through the perforations on the second. It required 2,100 pounds pressure to achieve this accomplishment, which in itself is quite remarkable in view of the fact that this pressure is greatly in excess of the maximum safety factor on the 4¾-inch oil string.

There were only two good wells finished in the Long Beach Field during the current week, in contrast with a number of others which came in wet. The Italo Petroleum finished the premier completion by bringing in No. 5 Lightburn flowing 5,180 bbls. of clean 30.1 gravity oil and 3,000,000 feet of wet gas daily. This well, which was purchased from the Graham & Loftus interests several weeks ago, was carried down to 6,634 feet and finished with a 4¾-inch oil string carrying 420 feet of perforated. It showed an exceptionally high gas pressure and blew in prematurely with the result that 1,300 feet of 3-inch drill pipe is still in the hole. Dabney & Johnson's No. 11 came in flowing 3,780 bbls. daily from 6,658 feet during the early part of the week and while the output is still showing an excessive cut it appears to be cleaning up in good shape and may ultimately be listed as a satisfactory completion although there is still some doubt as to whether it will entirely clean up without further work.

The Texas Company finished No. 3 Neece and this new well was brought in flowing 630 bbls. of clean 30.3 gravity oil daily from 7,272 feet, the hole having been finished with a 5¾-inch oil string. No. 1 Buel Ryder at 7,884 feet and No. 11 Harlow Kent at 7,482 feet, however, were both wet and these two deep wells will be recemented tomorrow morning. Graham & Loftus also pulled a wet job on No. 1 Girard as it came in cutting 60 per cent water on a preliminary productive test from 6,602 feet. The Shell did not have any better luck with No. 4 Wells as the initial output of this well, 320 bbls. daily from 6,837 feet, showed a cut of 64 per cent. The Richfield Oil Co.'s No. 2 Ella blew out several days ago while the 9-inch water string was being run in and it is still out of control, shooting mud, water and gas over the crown block.

Santa Fe Springs

George F. Getty's No. 17 Nordstrum has just completed its second week of freedom and, while it is still burning as fiercely as ever, the General Petroleum's engineers hope to be in a position to bring this gasser under control within the next few days. The 200-foot tunnel which will intercept the pipe in this hole 50 feet below the surface is nearing completion, although considerable difficulty has been experienced with water seepage during the past few days. It may require several days' work after the tunnel has been completed before this gasser is brought under control as it presents a very unusual case. The crown block and other metal equipment is lying on top of the pipe at the mouth of the well and the fire is consequently unusually wide as the gas is being diverted instead of flowing straight up in the air. This disastrous fire which has already caused the loss of 10 rigs and forced a suspension of work on 15 drilling wells, has reduced field production 1,500 bbls. per day due to the shutting in of several adjacent producing wells.

Graham & Loftus and the California Eastern Oil Co., having mutually settled their overlapping leases in the Potrero Field of Los Angeles Basin, are expected to spud in their joint well located in the town lot area north of present production some time within the next few days. The Associated in the meantime is proceeding with its conservative development program involving three wells, No. 3 Cypress, No. 1 Pacific Southwest and No. 1 Voorhes. No. 3 Cypress, which is standing recemented at the present time with a string of 11¾-inch landed at 3,255 feet, should be given a production test tomorrow with the outlook very promising for production if an effective water shutoff has been secured. No. 1 Pacific Southwest, bottomed at 4,777 feet, is also standing recemented, a string of 9-inch having been landed in this instance in the second zone at 4,420 feet. No. 1 Voorhes hit the top of the oil sand at 5,425 feet a few days ago and a string of 9-inch has been landed and cemented in this 5,442-foot hole preparatory to an early test.

Seal Beach

The small amount of development work being done in the Seal Beach Field of Los Angeles Basin, due to the commendable conservation policy adopted by operators holding productive acreage in that field, has naturally resulted in a smaller number of completions during the past several months. Lease obligations require a certain stipulated amount of drilling, however, and while this development work results in the addition of new producers from time to time, this is being kept down to a minimum by the Associated, Marland and Standard, which concerns control the entire productive acreage of the Seal Beach Field exclusive of the Alamitos Heights town lot area which is separated from the former by a saddle or break in the continuity of oil zones. The Marland put two wells on production during the early part of the week and incidentally increased its daily production 1,835 bbls. No. 23 Bixby, a new well drilled to 4,780 feet and finished with a 6¾-inch oil string was brought in flowing 660 bbls. of exceptionally clean 26.1 grav-

ity oil daily from the upper, or Bixby, horizon. No. 10 Selover, a former upper zone producer, was returned to production flowing 1,175 bbls. daily after being redrilled and deepened to 6,620 feet.

This well, incidentally, has had an exceptionally varied career. It was originally finished in May, 1927, flowing 1,520 bbls. daily from the Bixby zone at 4,776 feet but was redrilled and deepened two months later and returned to production doing 609 bbls. daily from 4,970 feet. In September, 1927, it was carried down still further and brought back under a natural flow making 1,875 bbls. daily from 5,525 feet. The Marland has two other wells nearing completion and both of them, No. 22 Bixby and No. 14 Selover, should receive early tests. The latter will be watched with exceptional interest because of its extreme depth. This well, which was carried down to 6,900 feet and finished with a 4¾-inch oil string carrying 830 feet of perforated, will test out the third zone which has heretofore not been entirely satisfactory in the northern part of the field due to water trouble. The Union completed No. 13 Stern, a new well in the Richfield district, several days ago and it is being listed as a successful commercial producer at 4,672 feet, from which depth it is flowing 230 bbls. of clean 23.1 gravity oil daily. The company did not have as good success in the Rosecrans Field, however, as its No. 21 Howard Park, which was returned to production flowing 350 bbls. per day from 4,607 feet, is cutting 75 per cent water and will require corrective work. The Western Oil & Refining Co. has just taken over the Wright lease of the Big Five Oil Co. in this field and L. T. McCutcheon, president of the latter, has been elected a director of the former. There are four wells on the 40-acre Wright lease making around 250 bbls. per day but production could be substantially increased by additional drilling as this quartet is producing from the shallow zone.

Mount Poso

The General Petroleum has just finished surveying the route of its newly projected 8-inch pipe line from the Mount Poso Field of Kern County and actual construction is scheduled to get under way within the next 30 days. The project will be an 8-inch welded line and will tie into existing facilities on the company's Young lease in Section 13-28-27. The General Petroleum's new line is being laid ofor the specific purpose of affording an outlet for the company's production on the Glide lease at Mount Poso in Section 21-27-28 where five producing wells have been completed up to the present time. It is quite likely, however, that other companies will also be afforded the use of this line on an exchange basis as soon as the production of this district can be used to advantage. Twenty-nine producing wells have been completed by the Union, Shell, General Petroleum, Barnsdall, Petroleum Securities, Signal Oil & Gas and The Texas Company in the Mount Poso Field up to the present time but all of them have been shut in since completion due to the absence of pipe line facilities.

Two new wells were chalked up in the Belridge Field of Kern County during the past week but both of them were relatively small. The Carneros Oil Co. finished its No. 94 in Section 30-28-21 as a 45-bbl. pumper from 685 feet and the Union followed suit by completing No. 1 King in the same section as a 40-bbl. pumper from 690 feet, the oil testing 25.3 degrees. A. L. Marsten is temporarily held up in his outpost south of the Fruitvale Field in Kern County due to the loss of an underreamer lug but this well may be completed at any time as Marsten has already started swabbing from 3,808 feet and will attempt to secure production notwithstanding the presence of this iron in the hole. The P. R. & W. Co.'s No. 1 Truesdell in Section 14-29-27 is being prepared for a test at 2,803 feet and the outlook for production is quite favorable as 175 feet of oil sand has opened up. The Pacific Eastern's deep test in this field is rotating ahead in a gray sandy shale at 6,034 feet with no important showings logged to date since passing through the upper sand.

Barnsdall Gets Showing

The Barnsdall Oil Co. is reported to have picked up a rather favorable showing at 3,650 feet in its No. 1 Elwood Acres, located in the Elwood Field of Santa Barbara County, but this report could not be confirmed due to the absence of Vice President R. A. Broomfield from the city. The Barnsdall has just started work on two new wells in this field and both of them should be completed some time within the next six weeks. The two new wells are No. 2 Bell Luton and No. 1 Doty, both of which are considered to be located in proven territory. Dunlap & Knapp also started a new well during the past week and their No. 1 Orphan, located on an odd lot, is already down 720 feet. The Petroleum Securities is building a road to a recently staked location on the Storke lease and this well will probably get under way within the next 15 days. The Palmer Union Oil Co. successfully finished No. 2 Stendel in the Cat Canyon Field of Santa Barbara County several days ago and this new well is pumping 194 bbls. of 18.1 gravity oil daily from 3,490 feet.

Northern California Wildcats

The San Emidio area of Kern County sprang into the limelight a few weeks ago when the Standard Oil Co. started work on its initial test in Section 35-11-22 and this area, lying southeast of the Midway-Sunset Field and west of the Wheeler Ridge Field in the extreme southern end of the San Joaquin Valley, will be further prospected as the Union Oil Co. has a rig going up in Section 5-10-21, a few miles southeast of the Standard's present wildcat. This particular section looks especially promising and may bear watching both from a geological standpoint and also because of its relative position with respect to the Midway-Sunset and Wheeler Ridge Fields. On the other side of the southern rim of the San Joaquin Basin, W. W. Stabler is being delayed temporarily with a fishing job in his wildcat at Comanche Point in Section 23-32-29. Several minor showings have been reported in this prospect hole and it, too, has possibilities although some are inclined to believe that the well in question is located too close to granite outcrops which are prevalent in this immediate area.

The General Petroleum and Midway Northern Oil Co. are testing out the potentiality of the Edison area, located about 3½ miles north and slightly east of Stabler's test and 7 miles east of the city of Bakersfield in Kern County. The General Petroleum revealed the existence of heavy oil at Edison several months ago but difficulty was experienced in shutting off water. A second test was subsequently spudded in by this company and it is at the present time rotating ahead at 3,894 feet with the top of the projected sand expected to be encountered at approximately 4,000 feet. The Midway Northern's Edison wildcat in Section 29-29-30 has logged several favorable showings and with the hole down 3,680 feet at the present time plans are being made to test out showings found between 3,456 feet and bottom.

The Pacific Eastern Production Co. is expected to throw considerable light on the possibility of developing commercial production in the Union Avenue area, located about 2 miles south of Bakersfield, some time within the next few weeks, as its No. 4 in Section 6-30-28 is nearing the depth at which oil and gas showings were encountered in No. 1 Union Avenue about a year or so ago. The Milham Exploration Co. has experienced considerable difficulty in completing its No. 7 Paige in the Buttonwillow gas field of Kern County due probably to mechanical trouble although there may possibly be some irregularity in subsurface conditions at this point. Two dry gas zones have definitely been proven up at Buttonwillow and with six wells already finished and capable of yielding approximately 50,000,000 feet per day from the upper zone, additional exploration work will be continued. Another potential gas producer has just been started in Section 16-28-23 and it is quite likely that this dry gas will be marketed commercially in the very near future, although this program may be temporarily delayed in sympathy with the statewide gas conservation measures now being sponsored by Governor Young's gas conservation board and an operating committee consisting of representatives from all of the major oil producers and public utilities.

It is quite evident that Ventura County and Santa Barbara will experience con-

(Continued on Page 111)

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, Well, Location—	S-T-R	Depth	Status
Ring Pet. Co., No. 1 Inglewood, Los Angeles Co.	28- 2-14	4,352	suspended
Mont. Park Oil Co., No. 1 Browning, Monterey Park	26- 1-12	4,420	suspended
Mont. Park Pet. Co., No. 1 Jepson, Monterey Park	25- 1-12	130	sd. drilling
World Pet. Corp., No. 1 Bell, Los Angeles Co.	22- 3-12	2,915	to resume
Associated, No. 1 Downey, Los Angeles Co.	33- 2-12	3,591	sd. sh. drilling
Empire Drlg. Co., No. 1 Bell, Los Angeles Co.	14- 2-12	4,132	hd. sd. drilling
Continental Oil Co., No. 1 La Mirada, Los Angeles Co.	10- 3-11	1,148	hd. sd. drilling
Shell, No. 2 Mission, San Fernando	4- 2-17	4,015	sd. sh. drilling
Andrews, Otis, No. 1 Lancaster, Los Angeles Co.	23- 8-13	2,080	suspended
Wood, D. H., No. 1 Lancaster, Los Angeles Co.	5- 7-10	589	suspended
Security Pet. Co., No. 1 Lynwood, Los Angeles Co.	13- 3-13	5,333	suspended
Dominguez Ext., No. 1 Compton, Los Angeles Co.	27- 3-13	5,510	abandoned
Harding, J. B., No. 1 Watts, Los Angeles Co.	17- 3-13	440	Port. outfit
Easton & Smith, No. 1 Calabasas, Los Angeles Co.	19- 1-17	2,982	suspended
Russell Oil Co., No. 2 Joughin, Los Angeles Co.	25- 2-17	838	hd. sd. drilling
Cal Drlg. Co., No. 1 Compton, Los Angeles Co.	11- 4-13	7,692	resumed work
Mallory, Ellis, No. 1 Manhattan, Los Angeles Co.	30- 3-14	Rig	rigging up
Pomona Oil Co., Well No. 1, Los Angeles Co.	32- 1- 8	822	sd. sh. drilling
Anchor Oil Co., No. 1 Puente, Los Angeles Co.	19- 2-10	4,601	br. sh. drilling
Richfield Oil Co., No. 1 Puente, Los Angeles Co.	9- 2-10	420	hd. sd. drilling
Shell, No. 1 Stern, Orange Co.	23- 3-10	5,980	testing
Bastanchury Ranch Co., Well No. 1, Orange Co.	21- 3-10	Mtl.	building rig
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	3,255	recemented
West. Oil & Refining Co., No. 1 Newport, Orange Co.	18- 6-10	....	location
Hall Pet. Co., No. 1 Murrietta, Riverside Co.	23- 7- 3	931	rig. cable tools
Hemet Pet. Co., No. 1 Ward, Riverside Co.	9- 5- 1	2,878	suspended
Davenport O. & G. Co., No. 1 San Marcos, San Diego Co.	30-12- 2	732	hd. sd. drilling
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 2	1,480	hd. sd. drilling
Torrey Pines Oil Co., Well No. 1, San Diego Co.	18-14- 3	1,930	gr. sd. drilling

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Bolsa Chica, No. 1 Kettleman, Kings Co.	30-23-19	3,502	suspended
California Oil Co., No. 1 Kettleman, Kings Co.	12-23-19	Rig	suspended
General Pet. Co., No. 2 Ochsner, Kettleman Hills	28-22-18	6,755	suspended
South Coalinga, Well No. 1, Kettleman Hills	35-22-19	3,110	suspended
Monocline Dev. Co., Well No. 1, Kettleman Hills	7-21-21	4,308	suspended
McPhail, Hugh, Well No. 1, Kettleman Hills	13-24-18	2,100	suspended
Milham Explin., No. 1 Kettleman, Kings Co.	2-22-17	7,235	redrilling
California Western Oil Co., No. 1 Elkins, Ventura Co.	28- 4-19	2,951	plug. back
Pirate Oil Co., No. 1 Simi, Ventura Co.	33- 3-21	Rig	rigging up
Exline, Emma, No. 1 Saticoy, Ventura Co.	33- 3-21	2,070	cemented
Standard, No. 1 Saticoy, Ventura Co.	1- 2-22	1,103	hd. sd. drilling
Petroleum Sec., No. 1 Diablo, Ventura Co.	26- 5-18	5,052	hd. sd. drilling
American Oil Co., No. 1 Camarillo, Ventura Co.	33- 2-20	550	hd. sd. drilling
Star Pet. Co., No. 2 Canet, Ventura Co.	13- 3-23	6,775	suspended
Shell, No. 1 Grubb, Ventura Co.	26- 2-23	4,870	hd. sd. drilling
Shell, No. 2 Oxnard, Ventura Co.	33- 2-22	2,206	sd. sh. drilling
Shell, No. 2 Beriywood, Moorpark	33- 3-20	7,240	testing
Continental, No. 1 Sulphur Mountain, Ventura Co.	21- 4-22	2,280	redrilling
Continental, No. 2 Sulphur Mountain, Ventura Co.	22- 4-22	1,980	sd. sh. drilling
Milham Explin., No. 1-A Buttonwillow, Kern Co.	8-28-23	4,662	gas well
Milham Explin., No. 2 Buttonwillow, Kern Co.	8-28-23	2,730	gas well
Milham Explin., No. 3 Buttonwillow, Kern Co.	8-28-23	2,694	gas well
Milham Explin., No. 4 Buttonwillow, Kern Co.	6-28-23	2,670	gas well
Milham Explin., No. 5 Buttonwillow, Kern Co.	5-28-23	2,500	gas well
Milham Explin., No. 6 Buttonwillow, Kern Co.	8-28-23	2,676	gas well
Milham Explin., No. 7 Buttonwillow, Kern Co.	8-28-23	2,720	testing
Milham Explin., No. 8 Buttonwillow, Kern Co.	16-28-23	135	sd. drilling
Doheny-Stone, No. 1 Salisbury, Kern Co.	7-29-24	4,291	suspended
Southern Calif. Gas Co., No. 1 Buttonwillow, Kern Co.	4-28-23	4,272	suspended
Southern Calif. Gas Co., No. 2 Buttonwillow, Kern Co.	10-28-23	Rig	suspended
Richfield Oil Co., No. 1 Semitropic, Kern Co.	21-26-23	3,632	sd. sh. drilling
Pacific Eastern, No. 1 Union Ave., Kern Co.	6-30-28	5,640	suspended
Pacific Eastern, No. 2 Union Ave., Kern Co.	6-30-23	4,500	suspended
Pacific Eastern, No. 3 Union Ave., Kern Co.	6-30-28	4,443	gas—shut in
Pacific Eastern, No. 4 Union Ave., Kern Co.	6-30-28	4,425	sd. sh. drilling
Pacific Eastern, No. 5 Union Ave., Kern Co.	5-30-28	3,260	hd. sd. drilling
Stabler, W. W., No. 1 Comanche Point, Kern Co.	23-32-29	2,860	cleaning out
General Pet., No. 2 Edison, Kern Co.	32-29-29	3,894	br. sh. drilling
Midway Northern, No. 1 Edison, Kern Co.	29-29-30	3,680	to test
Delzel, A., No. 1 Delano, Kern Co.	4-26-27	2,350	fishing
North American Roy., No. 1 Shafter, Kern Co.	8-28-25	4,560	suspended
Standard, No. 1 San Emidio, Kern Co.	35-11-22	1,563	hd. sd. drilling
Union, No. 1 San Emidio, Kern Co.	5-10-21	Mtl.	building rig
Fresno Madera Oil Co., No. 1 Clovis, Fresno	18-12-21	4,194	suspended
Union Oil Co., No. 1 Huasna, San Luis Obispo	34-32-15	3,073	redrilling
Union Oil Co., No. 1 North Huasna, San Luis Obispo Co.	12-32-14	1,376	br. sh. drilling
Panorama Oil Co., Well No. 1, San Luis Obispo Co.	7-31-21	3,002	sd. sh. drilling
Sequoia Co., Well No. 2, San Mateo Co.	15- 7- 5	1,605	suspended
Sunset Pacific, No. 1 Saratoga, San Mateo Co.	13- 7- 4	Rig	suspended
Shell, No. 2 Cowell, San Mateo Co.	6- 6- 5	3,648	sd. sh. drilling
Shell, No. 1 Butts, San Mateo Co.	16- 6- 5	3,139	redrilling
Shell, No. 3 Petaluma, Sonoma Co.	....	....	location
Calhoma Oil Co., No. 1 Livermore, Alameda Co.	9- 3- 3	1,350	cemented
Foster & Hammill, Well No. 1, Alameda Co.	31- 3- 3	....	location
N. Y. Hanlyn, Well No. 1, Haneda Co.	3- 5- 2	384	hd. sd. drilling
Tepesquit Oil Co., Well No. 1, Santa Barbara Co.	3- 9-32	2,686	cleaning out
Becker, Geo. F., No. 1 Summerland, Santa Barbara Co.	33- 4-25	3,090	suspended
Continental Oil Co., No. 2 Smith, Colusa Co.	31-18- 4	4,300	fishing
Colus Oil Co., Well No. 1, Colusa Co.	31-15- 4	380	redrilling
Nuna Oil Co., Well No. 1, Colusa Co.	19-15- 5	321	hd. sd. drilling
Superior Oil Co., No. 1 Calivada, Colusa Co.	31-15- 4	1,011	suspended
Marland Exp., No. 1 Bradley, Monterey Co.	32-24-11	4,861	redrilling
North Counties Oil Co., Well No. 2, Humboldt Co.	36- 2- 1	2,205	suspended
Humboldt Oil Co., Well No. 1, Humboldt Co.	6- 2- 1	3,041	redrilling
Kuhns, H. L., Well No. 1, Merced Co.	9-12- 9	1,479	hd. sd. drilling
Tuck, J. W., Well No. 1, Santa Clara Co.	9- 8- 1	580	hd. sd. drilling
L. A. Madera Synd., Well No. 2, Madera Co.	21-10-17	2,635	cleaning out

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	2,646,947	7,703,480
Fuel oil	.....	.....	.....	.....	111,621	6,356,553
Diesel and gas oil	.....	.....	79,350	11,734	1,543,114	2,228,626
Gasoline	336,239	48,034	98,781	14,112	10,205,930	6,906,173
Tops	.....	.....	.....	.....	259,600	.....
Coastwise—						
Crude oil	414,687	59,241	539,395	77,056	17,856,025	19,624,688
Fuel oil	356,664	50,952	291,328	41,618	12,210,597	9,768,623
Diesel and gas oil	31,984	4,569	5,778	825	811,535	317,987
Gasoline	49,557	7,080	237,852	33,979	6,426,129	7,301,979
Kerosene	.....	.....	6,331	904	64,061	155,649
Tops	.....	.....	.....	.....	171,566	104,595
Exports—						
Crude oil	.....	.....	68,800	9,971	1,585,007	1,958,308
Fuel oil	336,058	48,008	255,071	36,439	16,640,663	21,138,524
Diesel and gas oil	29,960	4,280	30,645	4,378	1,914,378	992,738
Gasoline	164,010	23,430	67,851	9,693	5,112,911	3,805,632
Tops	.....	.....	.....	.....	.....	227,204
Kerosene	189,560	24,223	215,289	30,756	3,142,993	1,551,344

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC, GULF COAST PORTS

Diesel and gas oil	.....	.....	.....	.....	342,425	597,158
Gasoline	30,246	11,464	78,029	11,147	1,596,605	1,612,975
Lubricants	.....	.....	.....	.....	277,151	303,016
Coastwise—						
Fuel oil	70,650	10,093	7,752	1,107	2,735,118	4,126,397
Diesel and gas oil	.....	.....	.....	.....	253,272	207,012
Gasoline	15,110	2,159	88,588	12,655	3,399,464	4,116,001
Kerosene	2,472	357	2,786	398	174,057	191,008
Exports—						
Crude oil	71,223	10,175	.....	.....	96,250	.....
Fuel oil	70,600	10,086	8,033	1,148	1,885,714	3,178,702
Diesel and gas oil	.....	.....	.....	.....	10,400	.....
Gasoline	5,418	774	211,397	70,200	3,531,758	2,215,261
Kerosene	.....	.....	71,817	10,260	464,080	654,079
Lubricants	.....	.....	22,136	3,162	33,535	18,370

GAS BIG PROBLEM AT SANTA FE SPRINGS

(Continued from Page 31)

however, if it can be conserved until after the Buckbee zone has become depleted as it, too, may be put to use in future repressuring operations. The future economic importance of this high pressure gas zone lies in the fact that it could be utilized to repressure the Meyer zone and consequently stimulate the production of crude oil after the Buckbee zone has fulfilled its mission. This gas could be introduced directly into the Meyer zone by using carefully selected wells which might either be drilled for this specific purpose or deepened from the Meyer. The only requisite would be a satisfactory shut off above the Meyer horizon and the freedom of pipe in this zone in order to facilitate the passage of gas from the lower to the upper horizon. Repressuring in this instance would be a natural function and eliminate the use of compressors.

The proposed gas conservation program now under consideration does not contemplate the use of this gas at the present time but anticipates the use of natural gas which is expected to issue from the deep Buckbee zone now under intensive development. It is estimated that this recently discovered Buckbee horizon will probably yield at least 200,000,000 feet of natural gas daily during the peak production expected to be reached early in 1929. It is quite obvious that commercial gas companies could not hope to cope with even a substantial amount of this enormous flush production which in all probabilities will be relatively short lived and consequently not justify the installation of additional lines. A very careful survey has indicated that operators may be able to use a maximum of 50,000,000 feet daily for storage and repressuring operations in the Meyer zone. The introduction of such a large quantity of gas naturally involves considerable work and requires the installation of additional compressor equipment although the amount of gas circulated and stored does not depend upon the capacity of equipment used but will be governed by the amount of gas which the Meyer zone will absorb.

Surplus 100,000,000 Feet

The peak production of natural gas from the deep Buckbee zone is still a matter of conjecture but it is the consensus of opinion that there may perhaps be a daily surplus of 100,000,000 feet above the amount which can be stored in the Meyer zone and sold commercially. This is especially significant as it may ultimately force operators to prorate production of crude oil in order to eliminate the economic waste which would result from the popping off into the air of this excess gas. The probability that the deep Buckbee zone will prove exceptionally productive is becoming more evident every day and while subsequent work may prove it capable of yielding in excess of say 200,000 bbls. daily it is a foregone conclusion that the output will never be allowed to reach this figure unless it shows a very unusually low gas oil ratio. It is quite possible therefore that crude oil production will either be prorated or pinched in long before the daily output approaches this high unless the gas companies succeed in diverting their excess gas production into other fields where it can be stored and used for repressuring depleted sands.

Some operators have the mistaken opinion that the proposed repressuring of the Meyer zone is only an emergency relief measure and consequently of temporary duration. In order to correct this erroneous idea it might be well to mention the fact that there will be sufficient gas available to last at least five years. It is quite obvious therefore that the projected conservation program to be initiated at Santa Fe Springs is one of extreme importance and great economic value. The number of wells to be used as receivers can not be determined until after a very minute survey has been undertaken but based on the amount of gas expected to be saved about 25 or 30 wells will be used during the peak load. Organization details and the method of handling costs will be worked out by the committee of producers elected on October 4.

Those Meyer zone wells which are ultimately selected for the injection of natural gas will be credited with their ultimate maximum production of crude oil based on normal decline curves and corrected from time to time as the ultimate recovery of the field is increased as a result of repressuring operations. In other words, the entire problem will be worked out on an equitable basis and all complicated questions will be submitted to the operating committee for approval before adoption. The rights of both lessees and lessors will be protected to the maximum and all should benefit as the production of crude oil should be greatly stimulated by this constructive conservation program.

As the situation stands at the present time, operators are being brought together on a common ground through the auspices of the Chamber of Mines & Oil in order that they may voice their opinion and it is hoped push this proposed conservation measure through to a successful conclusion. There is no question about whether the gas at Santa Fe Springs will be conserved. This is already a certainty. The only thing to be settled is whether it will be done by mutual cooperation or whether it will be obligatory regulation through the enforcement of state police powers. The following letter addressed to Santa Fe Springs' operators by F. G. Stevenot, Chairman of Governor Young's Gas Conservation Committee definitely settles the question about gas conservation. "It having come to the notice of the Governor's Gas Conservation Committee that a situation is developing at Santa Fe Springs which required attention, the Committee called a meeting of the operators of that field for September 20th. At this meeting a very frank discussion of the probable developments at Santa Fe Springs was had. It was the consensus of opinion of the operators present that unless the situation was handled in a prompt and intelligent way by the industry, a wastage of natural gas would shortly occur, of such an intolerable nature that action of some kind would become imperative. It was furthermore the consensus of opinion of the meeting that a committee should be constituted representative of all of the operators in that field, to study the situation and recommend such steps by the industry as seemed feasible and appropriate. The Governor's Committee considers such course a proper one, and feels justified in urging that you participate in the formation of such a committee. It is our understanding that through the Chamber of Mines and Oil you will be given notice of the time and place of a meeting of all the operators concerned."

INSTRUCTION COURSE IN PROPER USE OF CEMENT

Through the courtesy of the Portland Cement Association, the Mid-Continent Division of Development and Production Engineering, of the American Petroleum Institute, is offering a practical course of instruction covering the proper use of cement in all phases of oil field work. These meetings will be held Monday and Tuesday evenings, October 8 and 9 at 7:30 p. m., in the schoolhouse located on the Barnsdall Oil Co. Sullivan lease at Earlsboro, Okla.

An opportunity will be afforded for the discussion of various field problems in cement work, and for the examination and analysis of samples of concrete that have failed. It is felt, judging from the comments of superintendents, engineers, foremen and field workers, who have attended one of these courses, that the information disbursed will enable any company, whose men attend, to effect a material improvement in its use of cement, and will materially decrease the uncertainty and lack of uniformity in the concrete now obtained by rule of thumb methods.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 40)

CRANE COUNTY

Gulf Prod. Co.'s No. 5 W. N. Waddell, 330 ft. N, 280 ft. W of SE cor. NE Sec. 11, Blk. 25.... Top salt 1,215 ft., drlg. potash and salt 1,365 ft.

J. K. Hughes Dev. Co.'s No. 1 State Bank Commission, 2,310 ft. from NW line and 990 ft. from NE line Sec. 23, Blk. 4, H.&T.C.R.R.... Top salt 525 ft.; top lime 2,480 ft.; 1,000 ft. sulphur water in hole; shut down 3,775 ft.

Keck Investment Co.'s No. 1 McClintic, 330 ft. N and E lines of Sec. 206, Blk. F, C.C.S.D.&R.G.N.G. Ry. Sur.... Location.

Texas & Pacific C. & O. Co.'s No. 2 University, 2,310 ft. S and 1,650 ft. W line Sec. 34, Blk. 30, University Land .... Location.

CROCKETT COUNTY

Barbara Oil Co.'s No. 1 Cox, 237 ft. S and 1,190 ft. E of NW cor. R. B. Dickenson Sur.... Drlg. 285 ft.

V. T. Bolin & Co.'s No. 1 P. C. Coates, NW cor. SW Sec. 4, Blk. 2, I.&G.N. Sur.... Shut down 2,110 ft

T. W. Callahan et al's No. 1 J. S. Todd, C SW Sec. 13, Blk. "YZ," E.L.&R.R. Sur.... Drlg. 965 ft.; top salt 905 ft

Compton Co.'s No. 1 University Land, 1,875 ft. N and 916 ft. E of SW cor. Sec. 15, Blk. 50, University Land .... Shut down 2,062 ft.; 300 ft. oil in hole at total depth and 1,200 ft. water 1,965-85 ft.; fishing 2,062 ft.

W. W. Donnelly & Young's No. 1 Massey, Sec. 29, Blk. U-V .... Shut down 380 ft.

W. W. Donnelly & Young's No. 1 Shannon, SW SW SE Sec. 42, Blk. BB, T.C.R.R. Sur.... Spudded and shut down

W. W. Donnelly & Young's No. 1 Middlebuster, C Sec. 11, Blk. 9, D.&S.E. Sur.... 7,000,000 ft. gas at 1,662 ft., shut down 1,680 ft. (cor.).

W. W. Donnelly & Young's No. 2 Middlebuster, Sec. 18, Blk. 10, G.C.&S.F.R.R.... Top salt 774 ft.; shut down 1,378 ft.

Fuhrman Pet. Corp.'s No. 1 Pagett, 330 ft. from CNEL Sec. 17, S. C. White Sur. A-3,003.... Underreaming 900 ft

Moncrief, Zoch et al's No. 1 J. H. Tippett, 330 ft. from C NE line Sec. 45, Blk. 31, H.&T.C.R.R., but in Sec. 1, Blk. JH .... Location.

Renee Oil Co.'s No. 1 University, C N 40 acres of E 80 acres of SE Sec. 8, Blk. 47, University Land.... Shut down 2,704 ft

CULBERSON COUNTY

W. S. Hillyer's No. 1 McGregor, C NW Sec. 14, Blk. 81.... Standard rig.

Hickey & Stiver's No. 1 C. O. Finley, 660 ft. N and 1,980 ft. W Sec. 20, Blk. 82.... Fishing tools 1,381 ft., hole full water; small oil show 1,381 ft., pipe set 1,418 ft.; shut down 1,475 ft.

Scott & Dittman's No. 1 Miller, 1,160 ft. N and 2,480 ft. E Sec. 1, Blk. 97, Public School Land.... Rainbow 1,056 ft.; 300 ft. sulphur water 1,725 ft.; shut down for casing 1,767 ft.

DAWSON COUNTY

Magnolia Petroleum Co.'s No. 1 W. A. Jetter, C Sec. 1, Blk. 34, Twp. 4-N.... Hole full water 150 ft., running 15½-in. casing 595 ft.

ECTOR COUNTY

Pennsylvania Drlg. Co.'s No. 1 W. E. Connell, C NE Sec. 7, Blk. B-16.... Location

EL PASO COUNTY

Sillix et al's No. 1 W. D. Malone, Sec. 46, James M. Day Sur.... Set 12½-in. casing 1,010 ft., shut down 1,010 ft.

FISHER COUNTY

Bickerstaff et al's No. 1 McWhirter, 2,640 ft. E and 150 ft. N of SW cor. of Sec. 295, Blk. 2, H.&T.C.... Shut down 1,328 ft

Cranfill & Reynolds' No. 1 E. G. Young, C of NW of SW of Sec. 199, B.B.B.&C. Sur.... Drlg. 1,210 ft

Hucony Gas Co.'s No. 1 D. F. Maberry, 1,078 ft. S and 188 ft. W of NE cor. Elijah Bell Survey No. 327 .... Location.

Midwest Exploration Co.'s No. 2 Decker, 330 ft. S and E of NW cor. of S 60 ac. of W 160 ac. of N 320 ac. of Sec. 8, Blk. R, W. E. Richardson Sur.... Location

Midwest Exploration Co.'s No. 1 Higginbotham, Sec. 8, Blk. R .... Location

Roeser & Pendleton and Landreth's No. 1-A Decker, 280 ft. N and 330 ft. E of SW cor. of N 100 ac. of W 160 ac. of N 320 ac. Sec. 8, Blk. R, W. E. Richardson Sur. .... Drlg. 200 ft.

Sun et al's No. 1 Willingham, Sec. 207, Blk. 1, B.B.B. &C. Sur. .... Hole caving 2,985 ft

Sun et al's No. 2 Young, Sec. 208, Blk. 1, C NE SE, B.B.B.&C. Sur.... Drlg. 1,345 ft

Texas & Unity Oil Co.'s No. 1 Redus, SW cor. Sec. 211, B.B.B.&C. Sur.... Drlg. 3,460 ft

GLASSCOCK COUNTY

Josey & Finchbaugh's No. 1 S. R. Cox, 1,320 ft. W of NE cor. and located on the N line of Sec. 29, Blk. 33, Twp. 4s, T.P.R.R. Sur.... Hole full salt water 780 ft., drlg. 1,825 ft., shale; hole full salt water 1,801-15 ft.; total depth 2,330 ft.; fishing 2,450 ft.

World Oil Co.'s No. 2 L. S. McDowell, SW SE SW Sec. 32, Blk. 34, Twp. 2s, elev. 2,523 ft., contract depth 3,200 ft.... Top salt 925 ft.; shut down 2,360 ft., gray lime; hole in good condition; 8-in. casing set 3,025 ft.

HOWARD COUNTY

Andrews & McCamey's No. 1 Neal, 200 ft. S and W of NE cor. Sec. 17, Blk. 32, Twp. 1s .... Drlg. 675 ft.

Bristow & Merrick's No. 3 Dora Roberts, 1,650 ft. E and 330 ft. N of SW cor. Sec. 137, Blk. 29.... Drlg. 1,973 ft.

Coyle Concord Oil Co.'s No. 1-A Dora Roberts, 1,650 ft. E and 330 ft. S of NW Sec. 156, Blk. 29, W.&N.W. R.R. Sur. .... Top lime 2,170 ft., cem. 6⅝-in. casing 2,947 ft.

W. W. Donnelly et al's No. 1 Clay, SW cor. W half NE Sec. 127, Blk. 29, W.&N.W.... 700 ft. oil in hole from 1,919-27 ft.; 8 bbls. water 2,635-50 ft., sulphur water 3,040 ft.; drlg. 3,085 ft.

F. H. E. Oil Co. et al's No. 3 Dora Roberts-B, 990 ft. S, 2,310 ft. E of NW cor. Sec. 137, Blk. 29, W.&N.W.... Top pay 1,432 ft.; top lime 2,100 ft.; drlg. 2,375 ft

F. H. E. Oil Co.'s No. 5 Dora Roberts-B, 1,650 ft. N, 2,310 ft. W of SE cor. Sec. 137, Blk. 29, W.&N.W.... Location.

F. H. E. Oil Co. et al's No. 7-B Dora Roberts, 330 ft. S and E of NW of Sec. 137, Blk. 29 .... Location.

F. H. E. Oil Co.'s No. 5-D Dora Roberts, 2,310 ft. S and 1,650 ft. E of NW cor. Sec. 136, Blk. 29 .... Location.

Green Oil Co.'s No. 3 Clay, 250 ft. S and 660 ft. E of SE Sec. 127, Blk. 29, W.&N.W.... Drlg. 1,540 ft

Green Oil Co. et al's No. 1 J. W. Furrh, C SW cor. Sec. 11, Blk. 31 .... Location.

L. C. Harrison et al's No. 1, G. M. Dodge Est., SE cor. Sec. 9, Blk. 30, T-1-S, T.&P. Sur.... Hole full salt water 1,475-1,505 ft.; top lime 1,825 ft.; fishing 2,422 ft.

Virgil Hicks et al's No. 1 Read, C NW Sec. 12, Blk. 31, Twp. 1n, T.&P. Sur. .... Drlg. 2,905 ft.; top lime 2,650 ft., 8 1 8¾-in. casing 3,235 ft.; gas show 3,510 ft.; drlg. 3,916 ft.

Hyer & Yates' No. 1 Clay, 330 ft. S and E of NW cor. W half NE Sec. 155, Blk. 29.... Drlg. 1,580 ft

Louisiana Oil & Ref. Corp.'s No. 1 Kloh & Rumsey, 2,970 ft. E and 2,310 ft. S of NW cor. Sec. 3, Blk. 32, T-2S, T.&P.R.R. Sur.... Drlg. 1,288 ft.

Magnolia Pet. Co.'s No. 11 Kelly-Chalk, 1,650 ft. S and 330 ft. E of NW cor. Sec. 124, Blk. 29, W.&N.W.R.R. Sur. .... Shut down 925 ft.

Magnolia Pet. Co.'s No. 10 Dora Roberts, 330 ft. E, 2,310 ft. N of SW cor. Sec. 136, Blk. 29, W.&N.W. Sur. ... Drlg. 2,505 ft.
Magnolia Pet. Co.'s No. 11 Dora Roberts, 905 ft. N, 330 ft. E of SW cor. Sec. 136, Blk. 29, W.&N.W. Sur. ... Drlg. 2,450 ft.
Magnolia Pet. Co.'s No. 12 Dora Roberts, 1,650 ft. N, 330 ft. S of SW cor. Sec. 136, Blk. 29, W.&N.W. Sur. ... Location.
Magnolia Pet. Co.'s No. 13 Dora Roberts, 2,440 ft. N and 1,650 ft. E of SW cor. Sec. 136, Blk. 29, W.&N.W. Sur. ... Drlg. 1,015 ft.
Magnolia Pet. Co.'s No. 14 D. Roberts, 990 ft. N and 2,310 ft. W Sec. 157, Blk. 29 ... Waiting on rig.
Magnolia Pet. Co.'s No. 15 D. Roberts, 2,310 ft. S and W Sec. 157, Blk. 29, W.&N.W. ... Drlg. 870 ft.
Marland Oil Co.'s No. 9 Clay-A, 250 ft. S and E NW cor. NE NW Sec. 139, Blk. 29 ... Spudding.
Marland Prod. Co.'s No. 2-F Clay, 250 ft. N and 1,070 ft. E of SW cor. Sec. 138, Blk. 29, W.&N.W. ... Top pay 1,748 ft.; total depth 1,774 ft.
Marland Oil Co.'s No. 2 Clay-G, 250 ft. N and E of SW SE SW Sec. 126, Blk. 29 ... Drlg. 1,260 ft.
Marland Prod. Co.'s No. 1 Dora Roberts, SW cor. Sec. 128, Blk. 29, W.&N.W. ... Underreaming 1,200 ft.
Marland-Texon's No. 5-A Settles, 2,310 ft. N and 330 ft. E of Sec. 135, Blk. 29 ... Drlg. 2,545 ft.; top pay 2,495 ft.; top lime 2,025 ft.
Merrick & Bristow's No. 3 D. Roberts, 1,650 ft. E and 330 ft. N of SW cor. Sec. 137, Blk. 29 ... Drlg. 1,973 ft.
Midwest Exp. Co.'s No. 2 Clay-A, 1,070 ft. E and 250 ft. S of NW cor. Sec. 139, Blk. 29, W.&N.W. Sur. ... Drlg. 740 ft.
Phillips-Marland Prod. Co.'s No. 1 Thomas, 330 ft. S and E of NW cor. Sec. 13, Blk. 33, T.&P. ... Location.
Sun Oil Co.'s No. 3 W. R. Settles, 330 ft. W, 2,310 ft. N of SE cor. Sec. 135, Blk. 29 ... Set 16-in. casing 250 ft.; underreaming 865 ft.; oil show 1,800 ft.; oil show 2,345 ft.; 1 bailer per hour 2,345-55 ft.; drlg. 2,585 ft.
Taylor-Link Oil Co.'s No. 1 Kloh-Rumacy, 330 ft. N and 2,310 ft. E of SW cor. Sec. 3, Blk. 32, T.&P.R.R. Sur. ... Drlg. 1,620 ft.
Texon & Marland's No. 2 W. R. Settles-A ... Total depth 2,600 ft.; shot 280 qts. 2,480-2,600 ft.; 1,000 ft. of oil in hole; pumping; 126 bbls. first 24 hrs. and 40 bbls. fifth day; drlg. 2,915 ft.
W[illegible]spoon & Glasscock's No. 1 Settles, 330 ft. S and [illegible]70 ft. W. Sec. 6, Blk. 32, T.&P. Sur. ... Spudded with machine and shut down.

HUDSPETH COUNTY

American Land Co.'s No. 1 Lockhart and Roseborough, C SE Sec. 5, School Blk. 21 ... Shut down 260 ft.
California Co.'s No. 1 University, 3,821 ft. N and 2,554 ft. E of SW cor. Sec. 19, Blk. E ... Location.
Western States Oil Co.'s No. 1 Moore, C SE Sec. 16, Blk. 71, Twp. 6, T.&P. Sur. ... Drlg. 2,310 ft., black lime.
Western States Oil Co.'s No. 1 Gardner & Moseley, NE NW Sec. 12, Blk. 18 ... Total depth 2,945 ft.; hole full water 2,945 ft.; underreaming 8¼-in. casing at 2,840 ft.; trying to get water shut off; shut down 3,125 ft., orders.

IRION COUNTY

Kimbrough & Tuel's No. 1 J. M. Nutt, 1,920 ft. S, 200 ft. E of NW cor. Sec. 5, Gonzales Co. School Land ... Set 6-in. casing 1,360 ft.; drlg. 1,500 ft.
Mertzon Oil Co.'s No. 1 Roach, Sec. 24, 1,380 varas W, 485 varas S of NE cor., Mat Roach Sur. ... Oil show 1,522-30 ft.; shot 30 qts 1,522-30 ft.; hole full water; total depth 1,700 ft.
Signal Oil Co.'s No. 1 Suggs, Sec. 9, Blk. H, T.C.R.R. Sur. ... Drlg. 500 ft.
Signal Oil Co.'s No. 2 Suggs, Sec. 23, Blk. 27, H.&T.C. Sur. ... Location.
Sun Oil Co.'s No. 1 Williams, 1,190 ft. E and 230 ft. N of SW cor. Sec. 39, Blk. 21, H.&T.C.R.R. Sur. ... Spudding.
F. E. Webb et al's No. 1 J. M. Nutt ... Shut down 2,026 ft.
Wesley West et al's No. 1 J. D. Suggs, SE NW SE Sec. 19, Blk. 7, E.&T.C. Sur. ... Drlg. 1,906 ft.
C. J. Wrightsman's No. 1 Sawyer, 1,320 ft. from N and W lines Sec. 3,032, Blk. 24, H.&T.C. ... Location.

JEFF DAVIS COUNTY

J. K. Hughes Dev. Co.'s No. 2 Means, 1,622 ft. N line 600 ft. W line Sec. 345, Blk. 4, H.&T.C. ... Shut down 3,185 ft.

JONES COUNTY

Atkinson & Sandifer's No. 1 Hudspeth, 300 ft. S of CNL Sec. 22, Miles Sur. ... Rig.
Campbell & Clark's No. 1 E. Dickinson, 660 ft. N and 330 ft. E of SW cor. N 320 ac. of S 480 ac., H. B. Williams Sur. No. 273 ... Hole full water 2,240 ft., cem. 8¼-in. 2,280 ft.
E. P. Campbell et al's No. 1 Berry, 660 ft. S and E of NW cor. of N 80 ac. of E 160 ac. of N half Sec. 15, Blk. 2, S.P.R.R. Sur. ... Drlg. 1,125 ft.
Cranfill & Reynolds and others' No. 1 Bickley, 510 ft. N and 150 ft. E of SW cor. Sec. 50, Blk. 18, T.&P. Sur. ... Spudding.
Cosden & Herbert Oil Co.'s No. 1 Bickley, 320 ft. N and 319 ft. E of SW cor. S half of NW Sec. 50, Blk. 18, T.&P. Sur. ... Rig.
Cosden & Herbert Oil Co.'s No. 2 Bickley, 330 ft. S and 319 ft. W of NE cor. of S ½ of NW Sec. 50, Blk. 18, T.&P. Survey ... Drlg. 100 ft.
E. L. Evans' No. 1 S. W. King, Manuel Bueno Sur. No. 197 ... Fishing 1,825 ft.
Hines et al's No. 1 J. E. Saunders, 150 ft. S and 1,500 ft. E of NW cor. Sec. 1, Blk. 15, T.&P. ... Drlg. 2,038 ft.
Eastland Oil Co. and White Eagle Oil Co.'s No. 1 Derrick, 200 ft. S and W of NW cor. Sec. 53, Blk. 18, T.&P.R.R. Sur. ... Drlg. 2,270 ft.
Hurley Oil Co.'s No. 1 W. L. Gunther, 1,650 ft. from E and 330 ft. from N of SW Sec. 34, Blk. 18, T.&P.R.R. ... Hole full water 2,915 ft., drlg. 3,005 ft.
Pandem Oil Corp.'s No. 1 Cox, 150 ft. S and W of NE cor. Sec. 43, Blk. 14, T.&P. ... Shut down 1,700 ft.
McMan Oil & Gas Co.'s No. 1 Bickley, 2,320 ft. W and 1,650 ft. S of NE of Sec. 50, Blk. 18, T.&P. Sur. ... Rig.
Mook Texas Co.'s No. 1 Creight, 330 ft. S and E of NW cor. of E 100 ac., Scatlorn Sur. A-301 ... Cem. 8¼-in casing 2,305 ft.
Phillips Pet. Corp.'s No. 6 J. R. Walling, 1,635 ft. E and 330 ft. S of NW cor. S half Sec. 19, Blk. 19, T.&P. ... Drlg. 710 ft.
Phillips Pet. Co.'s No. 4 J. C. Mason, 993 ft. N and 330 ft. E of SW cor. W half NE Sec. 18, Blk. 19, T.&P. Sur. ... Drlg. 1,920 ft.
Roberts Oil Corp.'s No. 2 A. T. Smith, 330 ft. N and E of SW cor. 40-acre tract, Sec. 51, Blk. 18, T.&P. Sur. ... Fishing 610 ft.
Roberts Oil Corp.'s No. 3 A. T. Smith, 330 ft. N and W of SE cor. 40-acre tract Sec. 51, Blk. 18, T.&P. Sur. ... Rig.
Roeser & Pendleton's No. 1 Grayson-B, 330 ft. N and 288 ft. W of SE cor. of J. H. Grayson Sur. 3-A-1,771 ... Drlg. 740 ft.
Roeser-Pendleton et al's No. 1-B Higgs, 200 ft. S and W of NE cor. of S 100 ac. of Higgs' 200-ac. tract, E half of Sec. 30, W. T. Scott Sur. ... Shut down 1,814 ft.
Sinclair Oil Co.'s No. 1 Buckley, 330 ft. S and 319 ft. E of NW N half NE Sec. 50, Blk. 18, T.&P. Sur. ... Drlg. 815 ft.
Sinclair O. & G. Co.'s No. 2 Bickley, 975 ft. S, 320 ft. E of NW cor. N half NE cor. Sec. 50, Blk. 18, T.&P. R.R. Sur. ... Rig.
Snowden & McSweeney's No. 2 Bickley, 330 ft. S and 959 ft. W of NE cor. of N half of NW Sec. 50, Blk. 18, T.&P. Sur. ... Drlg. 610 ft.
Snowden & McSweeney's No. 3 Bickley, 970 ft. S and 319 ft. W of NE of N half of NW of Sec. 50, Blk. 18, T.&P.R.R. Sur. ... Drlg. 724 ft.
W. G. Stough et al's No. 1 J. P. Willis, J. C. Patterson Sur. No. 2 ... Shut down 1,740 ft.
The Texas Company's No. 1 Camp, 330 ft. N and 290 ft. E of SW cor. 194.5-acre tract in Sec. 13, Blk. 19, T.&P.R.R. Sur. ... Spudding.
The Texas Company's No. 2 Carter, 812 ft. N and 330 ft. E of SW of Laura Carter Sur., Sec. 13, Blk. 19, T.&P. Sur. ... Drlg. 650 ft.
Woods & Williams' No. 1 M. A. Parr, about 500 ft. S and E of NW cor. G. A. Kirkland Sur. A-507 ... Location.

KENT COUNTY

J. S. Cosden & Co.'s No. 1 Wallace, Sec. 56, Blk. 98, H.&T.C. Sur. ... Shut down 2,550 ft.
Phillips Pet. Co.'s No. 1 Sandell, 330 ft. N and E of SW cor. of SE of Sec. 429, Blk. D, H.&T.C. Sur. ... Hole full water 3,320 ft.; drlg. 3,840 ft.

KNOX COUNTY

Deep Rock Oil Co.'s No. 1 Moore ... Shut down 2,495 ft. for repairs.
Deep Rock Oil Co.'s No. 1 Big Four, 1,270 ft. S and 2,500 ft. W of NE cor. Sec. 21, Blk. 4 ... Shut down 4,516 ft.; hole full of water.

LOVING COUNTY

Lockhart & Co.'s No. 2 Allen, 330 ft. NW and 330 ft. NE Sec. 82, Blk. 33, H.&T.C. ... Rigging up standard tools 410 ft.
Lockhart & Co.'s No. 1-A Lepp, Sec. 85, Blk. 33 ... Set 6-in. casing 3,950 ft.; oil show 4,095-4,135 ft.; 250,000 ft. gas cleaning out 4,178 ft.; 2,000,000 ft. gas 4,172-75 ft.; total depth 4,173 ft.; shot 120 qts.; no results; drlg. 4,187 ft.
Lockhart et al's No. 1 Wheat & Ramsey, 1,650 ft. NW and 990 ft. SW Sec. 83, Blk. 1, W.&N.W.R.R. Sur. ... Shut down 780 ft.

MENARD COUNTY

Carpenter & Robbins' No. 1 Kothman, NW cor. SW SW Sec. 22 ... Shut down 600 ft.
J. C. Barnett and T. H. Drake's No. 1 Callan City Co. Ranch, Sec. 22 ... Shut down 900 ft.
Panhandle O. & R. Co.'s No. 1 G. P. Eckardt, C SW Sec. 10, Blk. 2, T.W.N.G.R.R Sur. ... Total depth 3,002 ft.; top pay 3,001 ft.; 2,000 ft. fluid in hole 1,100 ft.; shut down 3,008 ft.
Renfro et al's No. 1 J. Davis, C NW SW Sec. 79, Jacob Brecker Sur. ... Shut down 950 ft.
Sorrels & Jackson's No. 1 F. Wilhelm, C NE Sec. 6, Blk. C, Brooks & Burleson Sur. ... Shut down 700 ft.

MIDLAND COUNTY

Shelton et al's No. 1 Kloh & Rumsey, 600 ft. N and E of SW cor. Sec. 13, Blk. 40, T-4-S, T.&P.R.R. Sur. ... Hole full water 1,245 ft., drlg. 1,760 ft.
Shoup et al's No. 1 Roy Parks, C NW Sec. 34, Blk. 41, Twp. 2s, T.&P. ... Top salt 1,700 ft.; cem. 8⅛-in. casing 2,770 ft.; show oil 3,330 ft. shut down 4,004 ft.

MITCHELL COUNTY

E. P. Campbell et al's No. 1 Pond, 1,065 ft. W. 660 ft. N of SE cor. Sec. 79, Blk. 27, T.&P. Sur. ... Shut down 600 ft.
Clopton & Hammond's No. 1 McKenzie, 1,320 ft. N and E of Sec. 3, Blk. 1-A, H.&T.C.R.R. Sur. ... Location.
Hucony Gas Co.'s No. 1 C. Welchsel, 2,310 ft. N and 990 ft. E of SW cor. Sec. 78, Blk. 26, T.&P. Sur. ... Drlg. 1,175 ft.
Owen & Sloan Oil Co.'s No. 1-B Brown, 330 ft. N and E of SW cor. Sec. 93, Blk. 26, T.&P. Sur. ... Drlg. 1,100 ft.
Teas & Wheeler's No. 1 Radford, 1,320 ft. N and W of Sec. 1, Blk. 27, T.&P. Sur. ... Spudding.

NOLAN COUNTY

Herbert Oil Co.'s No. 1 Pepper, C of N half Sec. 32, Blk. 22, T.&P. Sur. ... Drlg. 2,405 ft.

PECOS COUNTY

Alexander & Lyle's No. 1 Myrtle Sellman, C SW SE Sec. 20, Blk. Z, T.C. Ry. Sur. ... Top salt 814 ft.; shut down 1,62[illegible] ft.; small oil show.
Amerada Pet. Corp.'s No. 1 Johns, 330 ft. S & W of NE cor. Sec. 20, Blk. 140, T.&St.L.R.R. Sur. ... Top lime 1,310 ft.; drlg. 1,455 ft.
George Anderson's No. 1 University, C Sec. 11, Blk. 17 ... Top salt 1,030 ft.; shut down 1,880 ft.
Bob Elmore's No. 2 Holmes, SE cor. Sec. 45, Blk. 1, I.&G.N. Sur. ... Shut down 2,140 ft.
M. C. Dibble & Hale's No. 1 Bonelrake, Sec. 115, Blk. 8, H.&G.W. Sur., elev. 2,555 ft. ... Top lime 1,305 ft.; drlg. 1,566 ft.
Ditto Oil Co.'s No. 1 J. M. Montgomery, Sec. 104, Blk. 231, A16,387 ... Shut down 170 ft.
A. T. Fletcher's No. 1 Power, 3,140 ft. S and 2,500 ft. W of NE cor. Sec. 11, Blk. 132, T.&St.L. Sur. ... Moving in material.
A. T. Fletcher's No. 1 Winfield, 3,140 ft. N and 500 ft. E of SW cor. Sec. 11, Blk. 132, T.&St.L.R.R. Sur. ... Drlg. 615 ft.; small show oil and gas 615 ft.
Kirby Pet. Co.'s No. 1 University, NE cor. Sec. 36, Blk. 24, University Land ... Top lime 1,305 ft.; shut down 1,380 ft.
Mauch & Kroger's No. 1 Holmes, Sec. 5, Blk. 178, T.C. Sur. ... Drlg. 940 ft.
McMan O. & G. Co.'s No. 1 Tippett, 200 ft. W, 285 ft. N of NW cor. Sec. 34½ in Sec. 107, Blk. 1, G.C.&S.F. Ry. Sur. ... Location.
McDonald et al's No. 1 A. A. Parsell, C NW SE Sec. 28, Blk. A, G.C.&S.F.R.R. Sur. ... Shut down 100 ft.
Moncrief & Zoch et al's No. 1 Union Land, C Sec. 35, Blk. 12, H.&G.N.R.R. Sur. ... Moving in material.
Olean Pet. Corp.'s No. 1 Harrell, Sec. 98, Blk. A-9, T.C.R.R. ... Top salt 845 ft.; shut down 3,303 ft. for orders.
Pecos Valley Oil Co.'s No. 1 Fee, Sec. 22, Blk. 16, H.&G.N. Sur. ... Fishing 885 ft.
B. J. Spikes' No. 1 George Brown ... Shut down 700 ft.
Rio Pecos Oil Co.'s No. 1 Yates, 330 ft. S and E of NW cor. Sec. 543, Blk. 1, H.&G.N. ... Moving in material.
Roxana Pet. Corp. and Kirby Pet. Co.'s No. 1 University, Sec. 23, Blk. 26 ... Hole full sulphur water 1,400-50 ft.; shut down 3,070 ft.; set 8-5/8-in. casing 3,065 ft.; drlg. 3,462 ft.; sulphur water 3,195 ft. drlg. 3,965 ft.
Schumaker et al's No. 1 Williams et al, 330 ft. N of middle of S line, Sec. 1, Blk. 117, G.C.&S.F. ... Spudded and shut down.
Southern C. O. P. Co.'s No. 1 Scharbauer Cattle Co., SW cor. Sec. 21, Blk. 134, T.&St.L. Sur. ... Show gas 1,455-60 ft.; total depth shut down 2,964 ft.
Transcontinental Oil Co.'s No. 1 University, NE NW SW Sec. 18, Blk. 18 ... Top lime 1,155 ft.; straightreaming 4,130 ft.
World Oil Co.'s No. 1 Kloh, Sec. 47, Blk. 45, Twp. 8, T. P. R.R. Sur., elev. 2,810 ft. ... Shut down 3,105 ft.
Paul Whonlick et al's No. 1 Arnold, 500 ft. each way from NW cor. Sec. 25, Blk. 1 ... Drlg. 1,265 ft.

PRESIDIO COUNTY

Phillips Pet. Co., Empire G. & F. Co., Delmar Oil Co. and C. E. Miller's No. 1 Tootle Est., C NE Sec. 75, Blk. 3, D.&P.R.R. Sur. ... Fishing 690 ft.
L. C. Brite's No. 1 Lee, Sec. 50, Blk. 12, G.H.&S.A. Sur., center of section ... Shut down 1,200 ft., crooked hole.

REAGAN COUNTY

Big Lake Oil Co.'s No. 151 University, 2,310 ft. S and W of NE cor. Sec. 1, Blk. 2, University Land ... Location.
Empire Gas & Fuel Co.'s No. 1 Sawyer Cattle Co.-A, 4,160 ft. from S line and 330 ft. from W line of Sec. 18, Blk. A, Leonard G. Gee Sur. ... Drlg. 650 ft.
Texon O. & L. Co.'s No. 1-B University Group 1 ... Top pay 6,250 ft.; hole full of oil, well made two small heads; drlg. 8,315 ft.

REEVES COUNTY

D. P. Davis et al's No. 1 H. C. McCart, 300 ft. S and 200 ft. W of NE cor. S half NW Sec. 26, Blk. C-18 ... Location.
Exploration Co.'s No. 1 A. A. Kinney, 1,500 ft. W of NE cor. Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. ... Total depth 2,900 ft.; to start up soon.
David R. Thompson's No. 1 A. A. Eddins ... Swedging csg. 6,655 ft.; pulling 5-in. csg.

World Oil Co.'s No. 1 A. L. Duff, 1,500 ft. from S, 850 ft. from NE, R. S. Johnson Sur. No. 68 — Elev. 2,774 ft.; total depth 4,518 ft.; plugged back 4,223 ft.; hole full fluid, slopping 1 bbl. of oil daily.

RUNNELS COUNTY

Agnew & Sons, Inc., No. 1 R. R. Russell, in Mrs. H. Folbien Sur. No. 13½ — Drlg. 3,021 ft.

Gibson & Johnson's No. 1 W. H. Rainwater, 660 ft. N and E of SW cor. of J. H. San Miguel Sur. (cor. location for No. 1 Harris) — Shut down 2,505 ft.

R. D. Hamilton et al's No. 1 A. Spill, 1,320 ft. S and W of NE cor. A. Spill 891 acres, out of Thomas R. Webb Sur. No. 358 — Shut down 100 ft.

Jones Oil Syndicate's No. 1 W. Dale, 212 ft. from N line, 150 ft. from W line Sec. 109, E.T.R.R. — Shut down 2,245 ft.

McLean et al's No. 1 G. W. Clayton, 150 ft. N line, 270 ft. from W line Sec. 135, E.T.R.R. — Shut down 1,185 ft.

Nourse & Tilton's No. 1 R. A. Cramer, 200 ft. S, 600 ft. E of NW cor. G.C.&S.F. Sur. No. 2 — Shut down 160 ft.

Kennedy et al's No. 1 J. E. Tally, 1,200 ft. from N line, 800 ft. from E line Sec. 534, V. V. McKenon — Shut down 3,007 ft.

Miles Oil Co.'s No. 1 L. S. Lawhon, NE cor. Sec. 68 — Show gas 960-80 ft.; shut down 2,450 ft.

Pure Oil Co.'s No. 1 Herman Kiesckе, 9,250 ft. S and 1,490 ft. W of NE cor. of J. Smith Sur. No. 228 — Made 4 bbls. water per hr. 760-65 ft.; underreaming 12½-in. casing 1,285 ft.; drlg. 2,565 ft.

R. B. Summers et al's No. 1 J. W. Reese, M. J. Parramore Sur. 26 — Shut down 1,650 ft.

Union Oil Co. of Nevada's No. 1 W. E. Allen, 1,000 ft. N and W of SE cor. Sec. 1, H.E.&W.T. Sur. — Location.

Vacuum Oil Co.'s No. 3 McMillan, 561 ft. E of No. 1 Domingo Diaz Sur. — Set 10-in. casing 1,447 ft.

SCHLEICHER COUNTY

J. F. Long and O. C. Long's No. 1 W. H. Williams, NE cor. Sec. 28, H.E.&W.T.R.R. Sur. — Shut down 275 ft.

J. T. Parks et al's No. 1 Tisdale, 150 ft. S and E of NW cor. S 120 ac. of Sec. 1,499, W. Halm Sur. — Moving in material.

SCURRY COUNTY

Landreth Prod. Co.'s No. 1 Hillmer, 330 ft. N and E of Sec. 75, Blk. 25, H.&T.C.R.R. Sur. — Drlg. 1,370 ft.

I. B. Mims et al's No. 1 J. J. Koonsman, Sec. 216, Blk. 2, H.&T.C. Sur. — Total depth 300 ft.

G. E. Dieckman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. — Spudded and shut down.

STERLING COUNTY

F. & G. Oil Co.'s No. 1 W. L. Foster, C SE Sec. 20, Blk. 12, S.P.R.R. Sur. — Shut down 616 ft.

Orr et al's (to be taken over by Empire G. & F. Co.) No. 1 Neal Reed, CNL Sec. 15, Blk. 30, W.&N.W. Sur. — Shut down 3,015 ft.

STONEWALL COUNTY

Sun Oil Co.'s No. 1 Reynor, 346 ft. S and W NE cor. Sec. 20, Blk. B, H.&T.C. — Drlg. 1,885 ft.

SUTTON COUNTY

Phillips Pet. Co.'s No. 1 A. G. Holman, 2,310 ft. S and 330 ft. W NE cor. Sec. 25, C.C.S.D.&N.G.R.R. Sur. — Drlg. 4,122 ft.; straightening crooked hole.

TAYLOR COUNTY

Burnham et al's No. 1 A. M. Y. X. — Spudded and shut down.

Grisham-Hunter Oil Corp.'s No. 1 T. L. Stevens, 220 ft. S and E of NW cor. Sec. 53, Blk. 19, T.P. Sur. — Fishing 710 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW Sec. 155, Blk. D, M.-K.-T.R.R. — Spudded and shut down.

Champlin Ref. Co.'s No. 1 Corder, C Sec. 110, Blk. 1, C.C.S.D. Sur. — Cem. crevice 3,535-40 ft.; total depth 3,552 ft.; cleaning out.

Keck Pecos Trust So.'s No. 1 Hamilton, C Sec. 6, Blk. D-7, E.L.&R.R. Sur. — Shut down 1,749 ft.

Milham Exploration Co.'s No. 1 Bassett, Sec. 76, Blk. Y, W. E. Robertson Sur. — Cem. 6⅝-in. casing 3,986 ft.; drlg. 4,130 ft.

Woodley & Jones, No. 1 Pankenham, C SE NW Sec. 48, Blk. B-2, C.C.S.D.&G.N.G.R.R. Sur. — Shut down 150 ft.

TERRY COUNTY

Kingsland O. & P. Co.'s No. 1 Brownfield, C NW SW SW Sec. 7, Blk. 1-A, E.L.R.R. Sur. — Drlg. 4,430 ft.

TOM GREEN COUNTY

Collins et al's No. 1 Jones, CSL Sec. 646, Shaffer Sur. — Shut down 1,800 ft.

Fitzgerald & Taliaferro's No. 1 Bennett, C SW Sec. 1,628, E. H. Ringer — Shut down 1,920 ft.

F. P. Green et al's No. 1 fee, 575 ft. from N and 1,450 ft. from W lines Sec. 165, District 11, S.P.R.R. Co. Sur. — Shut down 1,066 ft.

Lone Eagle Oil Co.'s No. 1 Sharp, SE W Elzel Sur. No. 167 — Spudded and shut down.

McLaughlin & Ridge's No. 1 R. Q. Holder, 3,140 ft. N and 80 ft. W SE cor. J. P. Parker Sur. (3,000-ft. test) — Show gas 1,757-59 ft.; shut down 3,005 ft.; hole full water 2,986 ft.

Tinker et al's No. 1 D. J. Jones, 150 ft. N and 4,250 ft. W of SE cor. J. J. Schaefer Sur. 646 — Shut down 1,800 ft.

Tulsa Oil Co.'s No. 1 Adams, C SW Sec. 163, Blk. 11, S.P.R.R. Sur. — Shut down 1,050 ft.

UPTON COUNTY

Humble O. & R. Co.'s No. 9 Ricker, 5,574 ft. N and 2,271 ft. W Sec. 5, M. S. Denton Sur. — Set 6-in. casing 490 ft.; top salt 640 ft.; drlg. 2,100 ft.

Keck Investment Co.'s No. 1 H. L. McClintic, 330 ft. S and W NE cor. Sec. 206, Blk. F, C.C.S.D.&R.G.N.G. Sur. — Rig.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, SE SE Sec. 30, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. — Cleaning out 3,968 ft.

O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. — Gas sand 2,491-2,520 ft. tested 125,750 ft. gas; reset 8-in. 2,511 ft.; shut down 4,210 ft.

Producers Oil Co. et al's No. 1 Everett Bros., 2,310 ft. S and 330 ft. E of NW cor. Sec. 40, Blk. DB, C.C.S.D.R.G.N.G. Sur. — Location.

W. B. Thraves et al's No. 1 W. E. Wilson, 6,830 ft. N, NE cor. Sec. 1, T.&P., thence 1,680 ft. E Sec. 115, Blk. E, G.C.&S.F. — Shut down 1,125 ft.; show oil and gas 1,055 ft.

Valvert Oil Corp.'s No. 1 Bassett, C NE Sur. 47, Blk. Y. — Set 15½-in. casing 767 ft.; shut down 860 ft.

WARD COUNTY

Denver P. & R. Co.'s No. 1 Cherokee Land & Investment Co., 990 ft. from NEL and 2,310 ft. from SEL Sec. 215, Blk. 34, H.&T.C. Sur. (4,000-ft. test) — Set 8¼-in. casing 2,505 ft.; top salt 2,755 ft.; shut down 3,160 ft., anhydrite.

E. H. Devore et al's No. 1 Black, Sec. 214, Blk. 34, H.&T.C. Sur. — Spudded and shut down.

E. B. Lovelace et al's No. 1 Redman, 1,980 ft. NE of SW line and 1,980 ft. SE of NW line, Sec. 162, Blk. 34, H.&T.C.R.R. — Spudding and shut down.

Prairie Oil & Gas Co.'s No. 1 Sealy Estate, 1,320 ft. S and W Sec. 95, Blk. A, G.M.M.B.&A. Sur. — Shut down 922 ft. red sand for casing.

Rector Oil Co.'s No. 1 Johnson, 1,150 ft. NW, 5,610 ft. NE, Sec. 10, Blk. 32, H.&T.C. — Shut down 735 ft. red rock; hole full salt water 595 ft.

Shipley et al's No. 1 Hazlett, 2,310 ft. NE and 2,310 ft. SE Sec. 17, Blk. 5, H.&T.C. — Shut down 900 ft.

Talbot et al's No. 1 Riddle, 330 ft. S and W of Sec. 90, Blk. 5, H.&T.C.R.R. Sur. — Location.

WINKLER COUNTY

Atlantic O. P. Co. et al's No. 2 Daugherty, 2,310 ft. N and E of SW cor. Sec. 3, Blk. 74, Public School Land. — Rig.

Atlantic O. P. Co.'s No. 1 Hendricks-H, 2,310 ft. N and 1,650 ft. W of SE cor. Sec. 30, Blk. B-5, School Land. — Drlg. 2,543 ft.

Amerada Pet. Corp.'s No. 1 L. Daugherty, 2,310 ft. N & W of SE cor. Sec. 3, Blk. 74, Public School Land. — Location.

V. T. Bolin et al's No. 1 Brown, Sec. 4, Blk. B-5 — Top salt 1,302 ft.; plugged back and shot 210 qts., 2,745 to 2,814 ft.; 2,000 ft. oil; pumped 42 bbls. 33.8 gravity oil in 5 hrs.; 45 ft. off bottom 200 ft. oil in hole; swabbed and pumped 17 bbls. 6 days.

V. T. Bolin et al's No. 2 Brown, 2,000 ft. S and W of NE cor. Sec. 4, Blk. B-5, Public School Land — Rigging up rotary.

Cranfill & Reynolds' No. 1 Hendricks-F, 660 ft. S and 2,310 ft. E of NW cor. Sec. 16, Blk. 26 — Rig.

Cranfill Bros. & Pickrell's No. 1 Hutchins, 2,310 ft. N and 330 ft. E of SW cor. Sec. 47, Blk. 26 — Cem. 8¼-in. casing 2,285 ft.

Culberson Bros.' No. 1 Hendricks, 1,650 ft. N and W of SE cor. Sec. 40, Blk. B-5, School Land — Rigging up rotary and shut down.

Empire Gas & Fuel Co.'s No. 1 Daugherty, 990 ft. N and 1,320 ft. E of SW Sec. 3, Blk. 74, School Land — Top lime 2,694 ft.; set 8⅛-in. casing 2,694 ft.; gas show 2,810-30 ft.; shut down 2,830 ft. when well started to blow out.

Bankers Prod. Corp.'s No. 1 Ida Hendricks, 2,475 ft. S and 330 ft. from E line Sec. 30, Blk. B-5 — Top lime 2,675 ft.; set 8¼-in. casing 2,678 ft.; oil show 3,850 ft.; drlg. 2,915; gas show 2,689 ft.

Flandell & Co.'s No. 1 Carter, 640 ft. S, 330 ft. W Sec. 26, Blk. B-3 — Rig.

Humble O. & R. Co.'s No. 1 J. B. Walton-A, NW cor. Sec. 48, Blk. 26 — Derrick.

Independent O. & G. Co.'s No. 2 McCabe, 2,310 ft. S and 990 ft. E of NW cor. Sec. 36, Blk. B-5, School Land — Set 8¼-in. 2,269 ft.; total depth 2,880 ft.; pulling 6-in. csg. 2,880 ft.; drlg. 3,035 ft.; top pay 2,985 ft.; spraying 40 bbls daily; oil show 2,770 ft.

Independent O. & G. Co.'s No. 3 McCabe, 990 ft. S and 2,310 ft. W of NE cor. Sec. 36, Blk. B-5, School Land — Top salt 950 ft.; top lime 3,290 ft.; oil show 2,515 ft.; drlg. cement 2,680 ft.

Liner Drlg. Co.'s No. 1 Seth-Campbell, NE cor. Sec. 2, Blk. B-5 — Shut down 450 ft.

Magnolia Pet. Co.'s No. 1 Scarborough, 2,310 ft. S and 990 ft. E Sec. 1, Blk. C-22 — Rigging up standard tools.

May Prod. Co.'s No. 1 Hendricks, 1,320 ft. N and 2,310 ft. W of SE Sec. 34, Blk. 26, Public School Land — Top lime 2,449 ft.; set 6⅝-in. casing 2,455 ft.; drlg. 2,750 ft.; oil show 2,710 ft.

Mining & Engineering Co.'s No. 1 T. G. Hendricks, Sec. 10, Blk. B-12 — Elevation 2,742 ft.; top lime 2,607 ft.; top pay 2,846 ft.; total depth 2,975 ft.; shut down.

Prairie Oil & Gas Co.'s No. 1 E. W. Cowden, 2,310 ft. N and 330 ft. E of SW cor. Sec. 3, Blk. B-12 — Rigging up standard tools.

Roxana Pet. Corp.'s No. 1-G Hendricks, 440 ft. S and 310 ft. E Sec. 39, Blk. 26, Public School Land — Top lime 2,310 ft.; coring 2,724 ft.; oil show 2,809 ft.; total depth 3,245 ft., lime; flowing sulphur water; plugged back to 3,160 ft.; flowing 100 bbls. daily, 65% water.

Sid Richardson, Frank Kelsey and White Eagle O. & R. Co.'s No. 1 Stockton Cattle Co. (O'Brien), 330 ft. S and W of NE cor. Sec. 50, Blk. F, G.M.M.B.&A. Sur. — Top salt 2,050 ft.; top lime 2,646 ft.; 6,000,000 ft. gas; cem. 5 3/16-in. casing 2,815 ft.; total depth 2,954 ft.; averaging 615 bbls. daily.

Southern C. O. P. Co.'s No. 1 Hendricks-A T-264, 1,625 ft. N and 330 ft. W of SE cor. Sec. 5, Blk. B-12, School Land — Elevation 2,754 ft.; top lime 2,559 ft.; total depth 3,132 ft.; 200 ft. sulphur water in hole 3,125 ft.; 2,800 ft. oil in hole; fishing bit 3,132 ft.

Southern C. O. P. Co.'s No. 3 Hendricks T-67-2-D, 1,650 ft. S and 330 ft. W of Sec. 28, Blk. 26 — Cem. 12½-in. casing 468 ft.

Southern C. O. P. Co.'s No. 3 Hendricks T-88-T, Sec. 34, Blk. 26, Public School Land — Top lime 2,452 ft.; set 8-in. casing 2,473 ft.; drlg. 2,620 ft.

Southern C. O. P. Co.'s No. 1 Hendricks T-88-D, 2,310 ft. N and 330 ft. W of SE cor. Sec. 4, Blk. B-12, Public School Land — Drlg. 950 ft.

Southern C. O. P. Co.'s No. 1 Hendricks T-88-R, 440 ft. N and 330 ft. E of SW cor. Sec. 27, Blk. 26, School Land — Top lime 2,274 ft. cem. 8¼-in. 2,300 ft.

Southern C. O. P. Co.'s No. 2 Hendricks T-88-R, 1,320 ft. N and 330 ft. E of SW cor. Sec. 27, Blk. 26 — Rigging up rotary.

Southern C. O. P. Co.'s No. 2 Hendricks T-90, 440 ft. N and 330 ft. W of SE cor. Sec. 47, Blk. 26 — Rig.

Southern C. O. P. Co.'s No. 3 Hendricks T-90, 2,210 ft. N and 330 ft. W SE cor. Sec. 47, Blk. 26 — Top lime 2,329 ft.; total depth 2,778 ft.; set 6⅝-in. casing 2,751 ft.; rigging up standard tools and shut down.

Texas & Pacific C. & O. Co.'s No. 1 Daugherty, 330 ft. from S and E Sec. 4, Blk. 74 — Top salt 1,460 ft.; top lime 3,894 ft.; set 8¼-in. casing 2,893 ft.; total depth 3,243 ft.; plugged back 3,200 ft.; cementing pipe; preparing to shoot.

TEXAS PANHANDLE WILDCATS

(Continued from Page 39)

J. B. Brewer's No. 1 McLarty, NE N½ SE, Sec. 2, Blk. 1, A.C.H.&B. Sur. — Rig.

Camel Oil Co.'s No. 1 Harrah-B, 330 ft. each way from NW cor. NE, Sec. 150, Blk. 3, I.&G.N.R.R. Sur. — Location.

Crabtree Drlg. Co.'s No. 1 B. F. Talley, SW NE, Sec. 114, Blk. M-2, B.S.&F. Sur. — Drlg. salt 1,300 ft.

Danciger et als' No. 1 Shaw, 1,000 ft. N and 330 ft. W SE cor. SW, Sec. 5, Blk. 1, A.C.H.&B. Sur. — 35,000,000 ft. gas 2,290 ft; show oil 2,610-13 ft; S.D. 2,683 ft.

Danciger O. & R. Co.'s No. 3 J. S. Morse, 330 ft. each way from NE cor. SW¼, Sec. 2, Blk. 26, H.&G.N.R.R. Sur. — Location.

Danciger Oil Co.'s No. 1 Thut, 330 ft. from N and E lines E 90 acres W½, Sur. 3, H.&G.N. Sur. (1 mile E of LeFors) — Drlg. 2,505 ft; 30,000,000 ft. gas 2,270-2,455 ft.

Dillard et als' No. 1 Furney, NE cor. SE, Sec. 202, Blk. B-2, H.&G.N. Sur. — Spudded and S.D.

Delaney et als' No. 5 W. Jackson, SE cor. W½ SW, Sec. 88, Blk. B-2, H.&G.N. Sur. — Two bailer wtr. per hr. at 3,335 ft; to plug.

Delmar Oil Co.'s No. 1 F. Foster, NW cor. SW, Sec. 55, Blk. B-2, H.&G.N. Sur. — Show oil; 4,000,000 ft. gas 2,835-97 ft; T.D. 3,757 ft; to plug back to 2,950 ft. and shoot.

Bob Dunlop's No. 1 J. S. Morse, 990 ft. N and 330 ft. E of SW cor. NW, Sec. 2, Blk. 26, H.&G.N. Sur. — Swb. 3 bbls. per hr.; lime at 2,415-75 ft; T.D. 2,550 ft; 43.6 gravity; drlg. 2,564 ft; no increase.

Dunnegan et als' No. 1 M. B. Davis, 330 ft. from SE cor. S½ NW, Sec. 8, Blk. 1, A.C.H.&B. Sur. — Location.

Edwards et als' No. 2 E. J. Case, 410 ft. from N line 330 ft. from E line, Sec. 182, Blk. B-2, H.&G.N. Sur. — 50,000,000 ft. gas 2,500-2,710 ft; cmt. 8-in. 2,715 ft; S.O. 3,035 ft; drlg. 3,356 ft.

Eslick et als' No. 1 Mrs. J. A. Hopkins, NW cor. W 80 acres of SW, Sec. 84, Blk. B-2, H.&T.C. Sur. — 6,000,000 ft. gas 2,654-2,795 ft; cased off; show oil 3,042-45 ft; 2,000,000 ft. gas 3,050 ft; S.D. 3,206 ft.

Ezell et als' No. 1 J. M. Bell, SE cor. NW, Sec. 183, Blk. B-2, H.&G.N. Sur. ... Rig.
Get Oil Co.'s No. 1 LeFors Townsite, 765 ft. from E line and 1,397 ft. from S line, being center of Lot 16, Blk. 5 ... Derrick.
Gulf Prod. Co.'s No. 3 Holmes-A, 330 ft. N and E of SW cor. W½ SE, Section 87, Blk. 3, I.&G.N. Sur. ... Rigging.
Gulf Prod. Co.'s No. 1 McLarty, 150 ft. N and 482 ft. W of SE cor. NE, Sec. 2, Blk. 1, A.C.H.&B. Sur. ... Drlg. 1,460 ft.
Gardner Bros. et als' No. 1 Ball, 323 ft. from N line and 330 ft. from E line of W 186.3 acres of N½, Sec. 3, Blk. B-2, H.&G.N. Sur. ... Drlg. 2,254 ft.
Landreth Prod. Corp.'s No. 1 Langham, SE cor. E 79 acres of N½, Sec. 1, Blk. 2, H.&G.N. Sur. ... 40,000,000 ft. gas 2,090-2,300 ft; drlg. by tools 2,525 ft.
LeFors Pet. Co.'s No. 3 Shaw, 990 ft. S and 375 ft. E of NW cor. T. Leach Sur. ... 30,000,000 ft. gas 2,075-2,340 ft; oil pay 2,631-43 ft; salt wtr 2,655-60 ft; made 300 bbls. fluid 50% wtr.
LeFors Pet. Co.'s No. 1 Shaw (Davis) C Lot 15, Blk. 13, LeFors Townsite ... Cmt. 8-in. 2,469 ft.
LeFors Pet. Co.'s No. 8 Shaw, 288 ft. from N line and 1,091 ft. from E line of T. Leach Sur. ... Rig.
LeFors Pet. Co.'s No. 3 J. M. Shaw, 293 ft. from N line and 271 ft. from E line of Leach Sur. ... Rig.
Magnolia Pet. Co.'s No. 2 Archer, SE N½ SE, Sec. 174, Blk. 3 ... Rig.
Magnolia Pet. Co.'s No. 2 W. Harrah, 990 ft. from N line and 330 ft. from W line of NW, Sec. 150, Blk. 3, I.&G.N. Sur. ... Drlg. 515 ft.
Magnolia Pet. Co.'s No. 3 fee, 600 ft. from S line and 330 ft. from E line, Sec. 11, Blk. 3, I.&G.N. Sur. ... Drlg. 2,258 ft.
Magnolia Pet. Co.'s No. 1 Saunders, 330 ft. from SE W½ of NW, Sec. 4, Blk. 1, A.C.H.&B. Sur. ... Cellar.
McElroy et als' No. 1 Bruce Bull, 260 ft. from E line and 330 ft. from N line, Sec. 3, Blk. B-2, H.&G.N. Sur. ... 20,000,000 ft. gas 2,190-2,337 ft; spraying 130 bbls. daily from 2,695-2,700 ft; T.D. 2,800 ft.
McElroy Oil Co.'s No. 2 Bruce Bull, 155 ft. from N line and 240 ft. from W line of E 87.3 acres of Sec. 3, Blk. B-2, H.&G.N.R.R. Sur ... Rig.
McMan O. & G. Co.'s No. 2 Binkley, 330 ft. each way from NW cor. W½ SE cor. Sec. 86, Blk. 3, I.&G.N. Sur. ... Derrick.
Midwest Explta. Co.'s No. 2 L. Holmes, 330 ft. from N and 357 ft. from E lines, SW, Sec. 86, Blk. 3 ... Drlg. 1,020 ft.
Operators Oil Co.'s No. 8 W. Jack, SE cor. N½ NE, Sec. 88, Blk. B-2 ... S.O. 2,750-68 ft; T.D. 2,969 ft; making light spray.
Osborn et als' No. 1 E. E. Barrett, SE cor. NE, Sec. 111, Blk. 3, I.G.N. Sur. ... S.D. 2,410 ft.
Panhandle Ref. Co.'s No. 1 Saunders, 330 ft. from S and W lines of E 80 acres of NE, Sec. 3, A.C.H.&B. Sur. Blk. 1 ... Location.
Parker et ux' No. 1 Mrs. M. Parker, 990 ft. S and W NE cor. 360 acres, Sec. 9, E. N. Lynch Sur. ... T.L. 2,175 ft; S.D. 2,859 ft.
Parker et als' No. 2 Mrs. M. Parker, 2,310 ft. from N line, 990 ft. from E line of S 360 acres, Sec. 9, N. Lynch Sur. ... Fish. 2,824 ft.
Perkins & Cullums' No. 1 G. H. Saunders, 330 ft. from S and W lines SW SW, Sec. 4, Blk. 1, B.S.&F. Sur. ... Drlg. 2,135 ft.
Phillips Pet. Co.'s No. 3 Johns, 330 ft. each way from SW. Sec. 87, Blk. 3, I.&G.N. Sur. ... Drlg. 450 ft.
Phillips Pet. Co.'s No. 1 Bob Olsen, NW cor. S½, Sec. 64, Blk. B-2 ... T.D. 3,239 ft; plugged back to 3,230 ft; shot with 440 qts. at 3,119-3,222 ft; 600 ft. oil and 60 ft. wtr. in hole; repairing rig.
Plains Drlg. Co.'s No. 1 G. H. Saunders, 990 ft. from S L and 330 ft. W L of E½ SE, Sec. 4, Blk. 1 ... Drlg. 2,300 ft.
Prairie O. & G. Co.'s No. 2 W. Harrah, 990 ft. from N line and 330 ft. from E line of NE 80 acres of Sec. 163, Blk. 3, I.&G.N. Sur. ... Drlg. 1,485 ft.
Pure Oil Co.'s No. 3 Davis, 330 ft. from NW of NE, Sec. 86, Blk. 3, I.&G.N.R.R. Sur. ... Drlg. 393 ft.
Purple Sage Oil Co.'s No. 2 E. B. Johnson ... 2,000,000 ft. gas; 200 ft. oil 2,870 ft; shot with 510 qts. 2,775-2,872 ft; 400 ft oil; running 6-in 2,875 ft.
Ray & Massie's No. 3 A. Chapman, 990 ft. from N line, 330 ft. from E line, Sec. 51, Blk. 25, H.&G.N. Sur. ... Cmt. 8-in. csg. 2,700 ft.
Rensaul Pet. Co.'s No. 2 M. Huselby, 330 ft. from N and E lines of S½, Sec. 55, Blk. 25 ... Location.
Republic Prod. Co.'s No. 1 G. H. Saunders, 330 ft. each way from SW cor. E½ NW cor. Sec. 4, Blk. 1, A. C.H.&B. Sur. ... Drlg. 284 ft.
Roxana Pet. Corp.'s No. 1 Lester, 330 ft. from S and 420 ft. from W lines, W 20 acres of SW NW, Sec. 1 Blk. 1, A.C.H.&B. Sur. ... Drlg. 1,920 ft.
Roxana Pet. Corp.'s No. 1 Shaw, 257 ft. from W line and 300 ft. from S line, SW, Sec. 5, Blk. 1, A.C. H.&B. Sur. ... Swb. 40 bbls; T.D. 2,800 ft; shot with 20 qts. at 2,779-93 ft; C.O.
Shamrock Oil Co.'s No. 2-A Chapman, 330 ft. each way NW cor. of W 41.6 acres of E½, Sec. 50, Blk. 50, H.&G.N.R.R. Sur. ... Location.
Shamrock Oil Co.'s No. 1 W. S. Clayton, 866 ft. from NW cor. of E 278.4 acres, Sec. 50, Blk. 25, H.&G.N. ... Drlg. 2,055 ft.
Shamrock Pet. Co.'s No. 1 W. P. Dial, 330 ft. S and E of NW cor., Sec. 49, Blk. 25, I.&G.N. Sur. ... Stdzng. 2,576 ft.
Skelly Oil Co.'s No. 1 Ball, 257 ft. from E line and 267 ft. from S line of SE 160 acres in Sec. 2, Blk. B-2, H.&G.N. Sur. ... Drlg. 1,950 ft.
South Bend Oil Co.'s No. 1 E. J. Case, 330 ft. NW SE cor. N½ W½, Sec. 180, Blk. B-2, H.&G.N. Sur. ... 35,000,000 ft. gas 2,475-2,685 ft; drlg. 3,375 ft.
St. Clair Oil Co.'s No. 1 C. H. Rowe ... Spudded and S.D.
St. Clair Oil Co.'s No. 1 L. S. Stockton, SE cor. Sec. 35, W. R. Lee Sur. ... Spudded and S.D.
Strans & Allen's No. 1 M. Davidson, SW cor. E½ SE, Sec. 87, Blk. B-2, H.&G.N. Sur. ... T.D. 3,105 ft; shot 200 qts. at 3,060-3,105 ft; swb. 28 bbls. 1 hr; 500 ft. oil.
The Texas Co.'s No. 4-A Chapman, 990 ft. N and 330 ft. from W line, Sec. 51, Blk. 25 ... Drlg. 2,096 ft.
The Texas Co.'s No. 2 M. B. Davis, 330 ft. N and E of SW cor. NE, Sec. 8, Blk. 1, A.C.H.&B. Sur. ... Drlg. 2,670 ft; 1 bailer per hr 2,545-55 ft.
The Texas Co.'s No. 3 Davis, 990 ft. from E line and 330 ft. from N line NW, Sec. 86, Blk. 3, I.&G.N. Sur. ... Bldg. rig.
The Texas Co.'s No. 3 M. B. Davis, 2,309 ft. from S line and 2,312 ft. from E line, Sec. 8, Blk. 1, A. C.H.&B. Sur. ... Cellar.
The Texas Co.'s No. 4 H. M. Davis, SE cor. NW, Sec. 86, Blk. 3, I.&G.N. Sur. ... Rig on ground.
The Texas Co.'s No. 1 Langham, 330 ft. from N and 257 ft. from E lines, E½ SE, Sec. 1, Blk. 2, H.& G.N. Sur. ... Drlg. 2,772 ft.
The Texas Co.'s No. 2 M. L. Langdon, 990 ft. S and 330 ft. W of NE cor. E½ SE, Sec. 1, Blk. B-2, H. &G.N. Sur. ... Drlg. 2,394 ft.
The Texas Co.'s No. 3 McLarty and Lester-A, 330 ft. from NE W½ SW, Sec. 1, Blk. 1, A.C.H.&B. Sur. ... Drlg. 1,682 ft.
The Texas Co.'s No. 4-A McLarty & Lester, 794 ft. from E line and 330 ft. from N line of W½ of SW, Sec. 1, Blk. 1, A.C.H.&B. Sur. ... Rig.
The Texas Co.'s No. 5 Saunders, 500 ft. from E line, and 400 ft. from S line, Sec. 12, Blk. A-6, H.&G. N. Sur. ... Location.
The Texas Co.'s No. 1 Saunders, 990 ft. from S line and 330 ft. from E line of W½ SE, Sec. 4, Blk. 1, A.C.H.&B. Sur. ... Drlg. 2,425 ft.
The Texas Co.'s No. 1 Bull, 1,043 ft. from N and 330 ft. from E lines, Sec. 2, Blk. B-2, H.&G.N. Sur. ... Drlg. 520 ft.
The Texas Co.'s No. 3-C Thut, 370 ft. from S and 349 ft. from E lines, Sec. 11, H.&G.N. Sur. ... Drlg. 1,964 ft.
The Texas Co.'s No. 3 J. E. Williams, 257 ft. from W line and 325 ft. from N line, Sec. 6, Blk. 1, A.C. H.&B. Sur. ... Fish. 2,405 ft.
Travis et als' No. 1 J. S. Morse, SE NW SW, Sec. 68, Blk. 25, H.&G.N. Sur ... S.D. 550 ft.
Whalen & Warren's No. 1 J. E. Williams, NW cor. E½ SW, Sec. 7, Blk. 1, A.C.H.&B. Sur. ... Rig.
White Eagle O. & R. Co.'s No. 1 Mrs. M. A. Shaw, 330 ft. from W and 972 ft. from N lines, Sec. 5, Blk. 1, A.C.H.&B. Sur. ... Drlg. 740 ft.
Wilcox Pampa Oil Co.'s No. 29 Wooley & Reynolds, 330 ft. S and W of NE SW, Sec. 61, Blk. 3, I.&G.N. Sur. ... Fish. 2,815 ft.
Wilcox Pampa Oil Co.'s No. 30 Wooley & Reynolds, NW SE NW, Sec. 61, Blk. 3 ... Drlg. 2,030 ft.
United Eight O. & T. Co.'s No. 1 E. B. Clay, SE cor. W½ SW, Sec. 177, Blk. B-2 ... Drlg. 2,740 ft.

HALL COUNTY

Briscoe Oil Assn.'s (was Seifert et als') No. 1 Owens, C NE, Sec. 179, Blk. S-5, Dennison & Pacific Sur. ... Spudded and S.D.
Rio Bravo Oil Co.'s No. 1 Hughes est., 950 ft. from N line, 150 ft. from E line, Sec. 39, Blk. H. I. A. Stephens Sur. ... Drlg. 2,995 ft.

HEMPHILL COUNTY

Sageby Oil Co.'s No. 1 Burnell Bros., 999 ft. from E line and 330 ft. from S line SE, Sec. 38, Blk. M-1, H.&G.N. Sur. ... Drlg. 490 ft.

HOCKLEY COUNTY

World Oil Co.'s No. 1 Ellwood, 320 ft. from N and W lines, League 7, Wilbarger County school lands; elevation 3,363 ft; contract depth, 5,000 ft. ... S.D. 1,455 ft. to install rotary.

HARTLEY COUNTY

Amarillo Oil Co.'s No. 9 Lee Bivins "A," C NW, Sec. 6, Blk. 21 ... Cmt. 8¼-in. csg. 2,923 ft.

HUTCHINSON COUNTY

R. G. Barnum et als' No. 1 Garland Sanford, Sec. 78, Blk. 46 ... S.O. 2,920 ft; S.D. 2,975 ft., 500 ft. wtr.
Barnum & Delmar's No. 1 Johnson Bros., NW cor. E½, NW, Sec. 37, Blk. Y, A.&B. Sur. ... 2,000 ft. oil from 2,954 to 3,011 ft.
Dunnigan et als' No. 1 C. W. Hugenbyhl, 330 ft. from S line and 330 ft. from E line, N½, Sec. 4, Blk. T, W.N.G.R.R. Sur. ... Rig.
Oil Operators Trust Co. and Marland's No. 2 J. M. Stanford-B, Sec. 82, Blk. 46, H.&T.C. Sur. ... S.D. 3,039 ft.
Phillips Pet. Co.'s No. 12 Elva Whittenburg, E. Tomlinson Sur. ... Fish. 5,333 ft.
Phillips Pet. Co.'s No. 1 Jasper (Fat) 2,327 ft. from E line and 980 ft. from S line, Sec. 23, Blk. 23 ... Drlg. 2,820 ft.
Phillips Pet. Co.'s No. 3 Sanford-Chap, 330 ft. S and 328 ft. E of NW cor. of E½ of S 160 acres of Sec. 78, Blk. 46, H.&T.C. Sur. ... Drlg. 2,876 ft.
Phillips Pet. Co.'s No. 3 Johnson Bros. (Florence), 412 ft. from W and 270 ft. from N lines, Tract 2, of Geo. Montgomery Sub-div. of Mary Whitley Sur. ... Rig.
Phillips Pet. Co.'s No. 1 Sanford-Felix, 330 ft. S and E of NW cor. of S 40 acres of E 80 acres of S 160 acres of Sec. 77, Blk. 46, H.&T.C. Sur. ... Drlg. 1,940 ft.
Phillips Pet. Co.'s No. 1 Sanford-Garford, 330 ft. N and E of SW cor. N 40 acres of E 80 acres of S 160 acres of S 320 acres, Sec. 77, Blk. 46, H.&T. C.R.R. Sur. ... Rig.
Phillips Pet. Co.'s No. 2 Sanford, 330 ft. from S line, 330 ft. from W line S 40 acres of E 80 acres of N 280 acres of S 320 acres, Sec. 82, Blk. 46, H.&T.C. R.R. Sur. ... Location.
Premier O. & G. Co.'s No. 1 L. E. Borton, C NE NW NW, Sec. 32, Blk. Y, A.&B. Sur. ... Rigged up and S.D.
Rock Creek Oil Co.'s No. 2 Johnson, 330 ft. from N and W lines SW SE, Sec. 28, Blk. Y, A.&B. Sur. ... Drlg. 2,550 ft.
Sand Creek Oil Co.'s No. 2 J. H. Jasper, 320 ft. from S line and 387 feet from W line of 100-acre lease, Sec. 23, Blk. M-23, T.C. Sur. ... Drlg. 1,480 ft.
Trimmns et als' No. 2 Garner, 990 ft. S and 330 ft. E of NW cor. J. W. Proctor Sur. ... Rig.
Wendell et als' No. 1 Johnson Bros., Sec. 1, Blk. X03 ... Set 10-in. csg. 2,035 ft.; S.D.
White Eagle Oil Co.'s No. 4 Johnson Bros. (Montgomery) 330 ft. from N and W lines E½, Tract 2, Geo. Montgomery Sub-div. of Mary Whitley Sur. ... Spud.

KING COUNTY

Humble O. & R. Co.'s No. 1 Pitchfork, Sec. 171, Blk. A-96, John H. Gibson Sur. ... Drlg. 4,070 ft.
The Texas Co.'s No. 1 J. H. Johnson ... U.R. 6-in. csg. 3,500 ft.

LAMB COUNTY

Dan Freel et als' No. 1 Ellwood, CWL, Sec. 9, Blk. T, T. A. Thompson Sur. ... Spudded and S.D.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles ranch ... Small show oil 1,133-40 ft. in sand; S.D. 3,943 ft.

MOORE COUNTY

Barnsdall Oil Corp.'s No. 1 L. R. Hagy, NW cor. Thomas Ross Sur. ... Drlg. 670 ft.
Dixie Creek Oil Co.'s No. 1-A Sneed, Jr., 330 ft. N and W of SE cor. E½, Sec. 65, Blk. 3, G.M. Sur. ... Rig.
Dixie Creek Co.'s No. 4-A Sneed, Jr., 330 ft. S and W of NE cor. E½, of SE, Sec. 65, Blk. 3 ... Rig.
Phillips Pet. Co.'s No. 1 J. T. Sneed (James) 330 ft. N and W of SW cor. P. Bazemore Sur. ... Rig.
Phillips Pet. Co.'s No. 2 J. T. Sneed, 660 ft. S and 330 ft. W of NW cor. J. H. Proctor Sur. ... Rig.
Prairie and Shamrock's No. 3 Gober, 2,302 ft. from N and 890 ft. from W lines of Sec. 16, Blk M-1, G. &M. Sur. ... Set 8-in. 2,696 ft.; 20,000,000 ft. gas 2,745-3,366 ft; cmt. 6-in. 3,505 ft; drlg. 3,570 ft.
Skelly Oil Co.'s No. 4 Armstrong & Byrd, 1,600 ft. S and 330 ft. E of NW cor. J. W. Proctor Sur. ... Rig.

MOTLEY COUNTY

Explta. Co.'s No. 1 Tillson ... S.D. 750 ft. for repairs.
Explta. Co.'s No. 2 Matador Land & Cattle Co., C SW, Sec. 37, John Gibson Sur. ... Drlg. 3,350 ft.

POTTER COUNTY

Amarillo Oil Co.'s No. 1 Bush "B," 270 ft. from S line and 390 ft. from W line of NW, Sec. 19, Blk. 6, B.&S.F. Sur. ... Drlg. 3,040 ft.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Ledrick, Sec. 7, Blk. 5-A ... Formerly abandoned at 5,240 ft; small show 36 gravity oil 5,288-91 ft; drlg. 5,307 ft.

WHEELER COUNTY

Angus et als' No. 2 Morgan, C E½ NW NE, Sec. 93, Blk. 17, H.&G.N. Sur. ... Rig.
Byrem et als' No. 1 Johnson, SW cor. NE, Sec. 88, Blk. A-5, H.&G.N. Sur. ... S.D. 1,300 ft.
Canadian River Oil Co.'s No. 1 Williams & Laycock, 330 ft. from NE cor. of NW, Sec. 2, Blk. 27, H.& G.N. Sur. ... Drlg. 1,080 ft.
Chapman & Morgan's No. 1 Otis Hatcher, NW cor. SW SE, Sec. 63, Blk. 17, H.&G.N. Sur. ... S.D. 715 ft.
Consolidated Gas Utilities Co.'s No. 1 M. Ackley-A, 660 ft. each way from NW cor. W½ SW, Sec. 20, Blk. 24, H.&G.N. Sur. ... Repairing rig 1,470 ft.
Edwards & Ramming's No. 1 T. C. Jones, 1,323 ft. from S line and 651 ft. from E line of NE, Sec. 1, Blk. 24, H.&G.N. Sur. ... Drlg. 1,800 ft.
Hartel et als No. 1 Tornbow, C SE NW, Sec. 53, Blk. 17, H.&G.N. Sur. ... S.D. 1,980 ft.
Lone Star Co.'s No. 1 Ackley, C NE NE, Sec. 20, Blk. 24, H.&G.N. Sur. ... Rig on ground.
Lone Star Co.'s No. 1 Hicks, C SW NE, Sec. 52, Blk. 17, H.&G.N. Sur. ... Rig.
Lone Star Co.'s No. 1 Shelton, C NE SE, Sec. 22, Blk. 24, H.&G.N. Sur. ... Location.
Lone Star Co.'s No. 1 Trostle, C NW NE, Sec. 20, Blk. 17, H.&G.N. Sur. ... Drlg. 525 ft.
Martin & Debon's No. 1 Gossett, C SE SE, Sec. 101, Blk. 23, H.&G.N. Sur. ... Drlg. 940 ft.
L. W. Rook's No. 1 M. Nelson, C SW NE, Sec. 5, Blk. 24, H.&G.N. Sur. ... Fish. 1,950 ft.
L. W. Rook's No. 2 A. Smock, C SW SE, Sec. 5, Blk. 24, H.&G.N. Sur. ... Rig.
Upham Gas Co.'s No. 1 Lamb, C N½ NE SW, Sec. 91, Blk. 17, H.&G.N. Sur. ... Rig on ground.
Upham Gas Co.'s No. 1 Stuckey, C E½ SE SW, Sec. 92, Blk. 17, H.&G.N. Sur. ... Drlg. 1,800 ft.
White et als' No. 1 J. M. Shelton, C SW NE, Sec. 100, Blk. 17 ... Drlg. 930 ft.
Wischkamper's No. 1 Brown-Young, C NW NE, Sec. 55, Blk. 23, H.&G.N. Sur. ... 3,000,000 ft. gas 1,650-70 ft; fish.

Tri-county Field Breaks Output Record

Western Kentucky Banner District Delivered Nearly 300,000 Bbls. During August. Production Increasing

By Whit
Staff Correspondent, Kentucky-Tennessee

OWENSBORO, Ky., Oct. 1.—There is no let-up in development work in the western division of Kentucky and the daily production of crude is increasing from week to week with the bringing in of new wells and the older ones holding their production in good shape. The advance of 15 cents per barrel in western Kentucky price by the Ohio Oil Co. brought the present price to $1.63 per barrel at the wells, making the second advance of the year. On January 1 the price was $1.33, the first advance of 15 cents per barrel coming on July 18, and the second advance of 15 cents on September 17, brought the price to the $1.63 mark. This last advance will mean more active development in all areas of the western area, and it means a lot of wildcatting over many of the counties. To say that the operators feel good over the advance is only putting it mildly.

Figures available, especially in the Owensboro-Hartford-Pellville area of the western division show that all former crude oil production records in the Tri-County Field of Ohio, Daviess, Hancock and McLean Counties were smashed during the month of August. A check on the production shows that nearly 300,000 bbls. of crude were delivered to the three pipe lines. The best previous month was July, when 261,782 bbls. of crude were pumped and delivered to the pipe lines. These figures do not include the total production, as some of it is used as fuel by the operators in the field.

At present the average daily production in Ohio, Daviess and Hancock Counties is around 9,000 bbls. a day. As a result of the bringing in of additional producing wells of unusually good capacity during the month, it is expected that the September production will exceed 300,000 bbls., with a value of $1.48 for the first couple of weeks, then the increase of 15 cents per barrel making the price $1.63 should mean an income from the total month's production around $466,500.

No Let-Up in Activity

There is not the slightest let-up in the activity of the operators anywhere in the counties comprising the Tri-County Field and adjoining counties. New pools are being opened each week, and the opinion is general that Owensboro will be the Kentucky oil center for several years, at least it looks that way at present, and the Owensboro Field will also be surrounded by development work across the Ohio River on the north and in southern Indiana, as some small producers of both oil and gas have already been found there.

In the Tri-County Field, which also includes the McLean County area, oil is being pumped from 877 wells, according to the records of the two pipe lines serving the territory. In addition, there are probably 30 to 40 wells in Ohio County served by another transportation system, over the railroad, in tank cars.

The Illinois Pipe Line Co.'s system, with its main receiving station at Doyle on the L.H.&St.L. Railroad, is serving 702 wells in Daviess, Ohio, Hancock and McLean Counties and from the edge of Breckenridge County. This service is the original transportation system for oil in the field. Its chief delivery is over the river by pipe line into its receiving station at Lawrenceville, Ill., where a refinery is located. River tank boats also are used to transport the crude to Louisville.

The Producers Pipe Line Co., which began business but a few months back, is serving 177 wells in Ohio County from its receiving station at Taffy and transporting it into the two 75,000-bbl. tanks on the L.H.&St.L. Railroad at the Glenmore Switch, a mile east of Owensboro. The chief transportation from this location is over the tank barges to Louisville.

The Aetna Oil service, which has a small field in Ohio County, rails its output over the Illinois Central into Louisville to its own refinery.

Eastern Kentucky Wells

A few scattered completions are reported from various sections of the eastern Kentucky fields, but no wells out of the ordinary are being brought in, all that are producers are very light, but the recent advance in the price of crude should bring about additional development.

In the Monticello Field of Wayne County, District 3, John Dillon's second test on the Foster heirs, is a dry hole. Bell & Beck are drilling No. 17 on the Alford Cooper lease. In District 2, the Coffey Oil Co. is drilling No. 1 on the H. C. Coffey lease. In District 5, J. C. Blair and others' No. 8 on the J. F. Gregory is a 2-bbl. pumper. No. 9, same farm, is due in, as is No. 13 on the O. E. Gregory for the Davy Oil Co.

In the Irvine Field of Estill County, District 7, McEldowney, Bowser and others' No. 2 William Tackett is a very light producer, less than a barrel. In District 8 the Superior Oil Corp.'s No. 19 on the A. F. West and others' property is a 2-bbl. pumper, and No. 20 is about due for completion, as is No. 15 on the W. P. Wise farm. Same company struck a dry hole in No. 41 on the J. D. Alexander, and should be close to pay sand at No. 24 on the T. W. Tyree, all in the same district.

In the Torrent Field, District 20, August F. Girard's test on Kash No. 2 farm, is a duster.

In Johnson-Magoffin Counties, District 27, Lolen and others' test on the Gundy Gardner is only a 1-bbl. pumper from the Weir sand. C. C. Bosworth is due to bring in No. 3 on the Brack Borders in District 29.

In Elliott County, Gambill, Burton and others' test on the B. B. Fannin, District 34, is listed as a dry hole.

In Clay County the Petroleum Exploration Co. is due to complete No. 1 on the Taylor Spurlock and is starting work at No. 1 on the Henry B. Hensley lease, same county. Same company may drill the second test on the Vinson Whittaker, in the Beaver Creek Field of Floyd-Knott Counties in District 21, as No. 1 was good for close around 250,000 feet.

Week's Work

A summary of the week's work in the Kentucky fields show 22 completions, 16 producers with an initial production of 721 bbls., 6 dry holes and no gas wells.

County—	Comp.	Oil wells	Prod.	Dry
Ohio	8	6	560	2
Daviess	3	3	65	0
Breckenridge	2	2	70	0
Butler	1	1	20	0
Estill	3	2	3	1
Wayne	2	1	2	1
Johnson-Magoffin	1	1	1	0
Wolfe	1	0	0	1
Elliott	1	0	0	1
Total	22	16	721	6

Western Kentucky

What looks like the next and coming pool of interest in western Kentucky is that in the Glendean area in the southwestern part of Breckenridge County, northeast of Ohio County and west of Hancock County. E. N. Hinshaw, Lange and others drilled in and shot No. 3 on the Glen Moorman lease, in the Glendean Pool, and after pumping for 16 hours average 2½ bbls. per hour, or at a rate of 60 bbls. a day, being the largest producer yet found in the new pool. No. 2 on this farm was a 10-bbl. producer, and No. 1 was good for 5 bbls. Hancock County failed to report any new completions, neither did McLean County since a couple of weeks ago when the Dimmick Brothers brought in a dry hole at their No. 3 on the Ratliff farm. Wells are drilling in both counties, but for some reason they are not getting them down to pay sand. Work has been held up to some extent by a scarcity of water. The well of R. E. Lingenfelder on the J. F. Karp farm, in Butler County, south of Ohio County, is rated as a 20-bbl. producer from a sand at 1,000 feet.

Ohio County Wells

The bringing in of a dry hole by James C. Ellis in No. 14 on the Bob Hamilton 176 acres, in the eastern part of the Ambrose Pool, was quite a surprise to every one as nothing but a big one was looked for. This is the second duster for the lease. James Ellis made up for the dusters by the bringing in of other good producers in the same part of the Ambrose Pool. His No. 33 on the J. R. Weller 110 acres in the heart of the same pool shows for around 120 bbls., as does his No. 5 on the B. L. Gossett, and No. 4 on the Mary Cundiff, same area, is reported for better than 80 bbls. initial.

Mecca Oil Co.'s No. 16 on the Cora Wells 130 acres, in the heart of the Ambrose Pool, is a 150-bbl. initial producer at a depth of 740 feet.

Raydure & Richenbrode's No. 2 P. M. Taylor, in the Ambrose Pool, is a 40-bbl. initial producer at a depth of 803 feet.

The Wood Oil Co., Inc., drilled in a dry hole in a test on the Emmet Park farm, south of Taffy.

In the Kelley Pool, the White Plains Oil & Gas Co. set a string of 396 feet of casing, got sand from 413 to 436 feet and went to a total depth of 446 feet and shot with 100 quarts in its No. 5 on the Ada Kelley 64 acres, with an initial production of 50 bbls., which is a good well for this pool.

The Ohio Oil Co. is drilling No. 16 on the J. C. Ellis farm, in the Ambrose Pool, and is reported near sand at No. 6 on the Gray farm, near Taffy. Daley & Lowman are working on No. 10 on the Bob Hamilton south 100 acres, in the Ambrose Pool. Powers and others are starting a well on the Arvin Tichenor farm, near Hartford. R. W. Richards and others are starting a well on the J. W. Mitchell, near Duntdee. Hunt and others are drilling on the Frank Landrum, up the Rough River from Dundee. Fred Botts and others are drilling No. 2 well, four locations from their No. 1 on the Jodie Hamilton farm, near the Adaberg Store. No. 1 was a dry hole. Sunnydale Oil & Gas Co. is drilling No. 3 on the Ira Gray 184 acres, at Dukehurst, near the Bob Hamilton farm.

Daviess County Wells

So far as completed wells are concerned, the active Daviess County Field showed only three new wells, although quite a number are in the sand, but not yet on the producing end, and there is no telling their value until they start putting oil into tanks.

Conrad Kipp Oil Co.'s No. 8 on the Mattingley farm, near Knottsville, is

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GOOD WELL IN OLD LIMA FIELD; CENTRAL OHIO BUSIEST IN EAST

By Whit
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Oct. 1. — The old Lima Field had one good well on the Swartzmiller in the Seneca County area. Indiana announced only one completion and it was a failure. Illinois is quiet. Central Ohio fields are being speeded up with new development and the next few weeks will see much activity.

In the Lima Field of northwestern Ohio, the Murphy Pool, in Liberty Township, Seneca County, had eight completions and five were failures. J. H. Murphy & Son's No. 4 on the Joseph Swartzmiller, in Section 28, in the heart of the pool, came in for a production rated at 150 bbls. initial. The Muncy Valley Oil Co.'s No. 7 on the Jacob Kimmet, in the northwest quarter of the same section, produced 25 bbls. No. 8, same farm, which was brought in just before No. 7, and No. 9 showed 75 bbls. initial. Duncan, Roose & Milligan drilled a duster in No. 1 on the Ralph Feasel farm, same section. Lyons and others drilled a dry hole in a test on the G. J. Sorg farm, Section 22, same township, and northeast of the big producers. C. H. Moses and others drilled a dry hole on the Lucy Betts 160 acres, NE Section 22, also to the northeast of production in the Murphy Pool. S. Feasel and others got a duster at a test on the George Feasel 139 acres, the W half of the SW Section 15, same township, also to the northeast of the pool. J. H. Murphy & Son's No. 3 on the J. Hunker, SE Section 28, slightly southeast of the good wells on the J. J. Kimmet farm, east of the good production on the J. Sendenbach farm and south of good wells on the Dayton Connor farm, all adjoining the Hunker lease, produced 15 bbls. initial.

In the Murphy Pool, the McPherson Oil Co., which purchased from J. H. Murphy & Sons a lease on the Joseph Swartzmiller 80 acres, with four wells, being the W half of the NW Section 28, is now drilling No. 5 on the lease. The reported price on this lease was $100,000. W. W. White and others are drilling a test in Section 26 on the George Fredericks farm. Marshall Brothers are drilling No. 1 on the August Flechtner farm. Muncy Valley Oil & Gas Co. is drilling No. 10 Joseph Kimmet, Section 28. J. W. Witmore and others are drilling Nos. 3 and 4 on the Dayton Connor farms, Section 21 and 28. No. 4 is just starting spudding. J. H. Murphy & Sons are drilling No. 4 J. Hunker, Section 28; Kimell Oil Co. is drilling a test on the Levi Reinbolt, Section 32, and O. H. Moses and others are working at a test on the F. Bollinger farm. In Hopewell Township, Lyons and others drilled a dry hole in a test on the Henry Hough farm, Section 7. Robert Maybier is drilling a test on the D. S. King, Section 10, and Pankhurst and others are drilling a test on the W. McClure, Section 13. A. Skronsewfky, an old-time Tiffin, Ohio, operator, always contended that oil would be found in the area of Liberty Township, where he owned a large acreage in Section 27, just east of the pool.

In Jackson Township, Sandusky County, Melvin Good has a 3-bbl. pumper at

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Better Wells Completed in the East

Southeast Ohio Has Some Good Producers and Pennsylvania Has Best in Several Months. Gassers in West Virginia

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURG, Pa., Oct. 1.—In size some of the wells completed showed some improvement over the previous week. All are in the deep sand territory in southeast Ohio, except one, which is in southwest Pennsylvania. West Virginia, as usual, completed more gassers and dry holes than oil producers. In nearly all sections heard from, operations for the month will show fewer completions and less new production. This is likely to occur unless a new pool can be discovered in southeast Ohio, such as the one that has been a feature in Harrison Township, Perry County, Ohio. For a good many months this pool has been furnishing more new production than all others combined. Unless something unexpected is discovered, West Virginia and southwest Pennsylvania will have made a poor showing at the close of the year of development work. Neither has brought forward a new pool or an extension to the old fields.

Best Completions for Week

In the SW of Section 17, Hanover Township, Licking County, the Pure Oil Co. completed and shot in the Clinton sand a test on the Henry Loughman farm. It produced 225 bbls. the first 24 hours.

In the NE of Section 21, Harrison Township, Perry County, William Cline & Co. completed and shot in the Clinton sand No. 3 on the Burley-Winter farm. It produced, by flowing, 230 bbls. the first 24 hours. In the NE of Section 20, David Melick, trustee, completed a test on the Frank W. Tedrow lot. It produced 40 bbls. the first 24 hours after shot in the Clinton sand.

In the NE of Section 21, Harrison Township, Perry County, the Wehrle Co. got a 50-bbl. producer when it completed and shot in the Clinton sand a test on the Winmore Service lot. In Section 34, Falls Township, Hocking County, Berlin Brian and others got a gasser good for 1,700,000 feet at a test on the James Githerie farm.

Licking County

In Section 4, Madison Township, Licking County, Charles Vaughn has completed in the Berea grit a test on the G. C. Morrison farm. It is a 4-bbl. pumper. In Section 13, same township, the Hope Construction & Refining Co. completed and shot in the Clinton sand a test on the Bert Hoyt farm. It filled up 500 feet with fluid the first 24 hours and will probably make a very light pumper.

In the NW of Section 22, York Township, Morgan County, the Buckeye Supply Co. and others completed a test on the George Pillsbury farm. It is a light gasser in the Clinton sand at a total depth of 3,615 feet. In Section 21, Harrison Township, Perry County, the Mannbough Development Co. completed in the Clinton sand a test on the L. Dever lot, a 10-bbl. pumper in the Clinton sand.

In Monroe Township, Perry County, the Allegheny Oil Co. completed in the Berea grit No. 5 on the Elizabeth Beresford farm, a 3-bbl. pumper. In Section 9, Liberty Township, Washington County, C. E. Smith and others have a duster in the Big Injun sand at No. 3 on the Ida Mercer farm.

Meigs County

In Section 20, Sutton Township, Meigs County, the Golden Run Oil Co. completed in the Berea grit a test on the William Sanger farm. It is a duster. In Section 18, same township, H. B. Goodland and others have a 3-bbl. pumper at a second test on the T. and N. Brewer farm. In Subsection 33, Bedford Township, the Logan Gas Co. is drilling a test on the Russell Cuckler farm.

In Salem Township, Washington County, Meister & Blair have a light pumper at a test on the Meister-Blair farm. They are drilling a second test on the same farm.

Holmes County

In Section 6, Richland Township, Holmes County, the Kemrow Co. has a duster at No. 6 on the James Gray farm. In Section 16, same township, the East Ohio Gas Co. had the same luck at a second test on the Walter Croskey farm. In Section 6, Paint Township, the Ohio Fuel Gas Co. has a gasser at a second test on the Isaac Miller farm. In Clarke Township, Coshocton County, the Ohio Oil Co. has a fair producer on the Frank Mullet farm.

In Fallsbury Township, Licking County, the Emerald Petroleum Co. has a 4-bbl. pumper at No. 7 on the G. W. Chapin farm. The Preston Oil Co. has a fair producer at a test on the G. C. Rine farm. The same company is due in the Clinton sand at a test on the A. J. Beatty farm. In Penn Township, Morgan County, the Ohio Fuel Gas Co.'s test on the Fred Williamson farm is a gasser in the Berea grit.

In Section 4, Malaga Township, Monroe County, N. G. Staudt and others completed a test on the George Rush farm, dry in all sands. In Section 11, Franklin Township, Herman C. Baker & Co. have a 20-bbl. producer at No. 7 on the Herman C. Baker farm.

In Section 12, Reading Township, Perry County, C. C. Hilliard and others have a 10-bbl. pumper at a test on the Russell Baker farm.

In Section 23, Washington Township, Hocking County, the Gordon Oil Co.'s No. 7 on the James Brimner farm is a gasser in the Clinton sand. In Section 15, same township, the Hope Construction & Refining Co. has a 9-bbl. pumper at No. 3 on the Willoughby Huggings farm.

Tests Starting

In Section 15, Washington Township, Hocking County, the Gordon Oil Co. has rigged up on the G. W. Ermaine farm. The Griffin Producing Co. is due in the Clinton sand on the Gideon Lowe farm. In Section 30, Coal Township, Perry County, the Buckstone Oil Co. is drilling on the John Wion farm. It will be due in the Clinton sand this week. In Section 21, Ward Township, the Kachelmacker Estate has a rig up on the J. Carson farm.

Drilling Deep Wells

In Harrison Township, Perry County, Ohio, there have been a large number of very fair wells drilled in the Clinton sand. In spite of the closeness of the drilling there still seems to be plenty of optimism which is evidenced by the most recent report of operations in that district, some of which follows. David L. Melick, trustee, has reached the sand in his test on the Frank W. Tedrow. William Cline and others are drilling No. 4 on the J. C. Sowers farm and have reached 1,000 feet. The Ohio Fuel Gas Co. is drilling No. 1 on the Frank C. Martin at 3,300 feet and it is about due. The same company has reached 1,050 feet in its test of the Amy Brown, 2,950 feet in its test of the Julia D. Tuwner and is building a rig for a test on the D. Kinman farm. The Wehrle Co. has reached 2,800 feet on No. 1 on the Charles Allen farm. R. C. Miller and others are building a rig for No. 1 on the J. M. Blue farm. The Bloomingville Oil Co. has reached 2,900 feet on the No. 1 Epley Brown. The Mammbourg Development Co. has reached the sand on the S. Dever farm. Burlin & Leeper are drilling at 1,400 feet on the McKeever heirs farm.

The Griffin Producing Co. is drilling at 2,600 feet on its test of the Abe Mohler farm in Green Township, Hocking County. In Richland Township, Holmes County, there are several at fair depths. The Kemrow Co. has reached 3,000 feet in its test of the Harry M. Frick farm. The East Ohio Gas Co. is drilling at 2,750 feet in its test on the D. E. Bucy farm. In Hardy Township, Holmes County, the same company has reached 2,850 feet on the L. A. Sowash farm. In Monroe Township, Section 4, Coshocton County, the Logan Gas Co. is spudding in for its test of the Charles King farm. The Midland Oil Co. has rigged up for its No. 2 on the Ella M. Denny farm, in Section 18, Hopewell Township, Muckingum County.

West Virginia

The West Virginia fields completed gassers and dry holes. In Center district, Gilmer County, the Chartiers Oil Co. completed in the Salt sand No. 7 on the Baptist Missionary Church farm. It is a gasser. In Lee district, Calhoun County, the Ohio Fuel Oil Co. has a Big Injun sand gasser at a test on the Jesse S. Roberts farm.

In Chapmanville district, Logan County, B. G. McCorkle and others have completed a test on the Edward Carrott farm. It is a duster. In Carroll district, Lincoln County, L. R. Sweetland has a gasser in the Big Injun sand at No. 35 on his own farm. In Washington district, Marshall County, Johnson & Dowdell have drilled deeper their test on the Edward Newman farm. It is a duster.

In McClellan district, Doddridge County, the Little Five Oil & Gas Co. completed its test on the H. I. Riffee farm. It is a 10-bbl. pumper in the Gordon sand. In Ten Mile district, Harrison County, R. T. Lowndes has a gasser in the Speechley sand at a second test on the John S. Hursey farm.

In Liberty district, Marshall County, the Manufacturers Light & Heat Co. has a Gordon sand gasser at a test on the C. N. and F. B. Himelrick farm. In the same district, the same company drilled deeper its test on the M. A. Walton farm. It is a gasser in the Big Injun sand. In Paw Paw district, Marion County, the Owens Bottle & Machine Co. has a gasser in the 50-foot sand at a second test on the Margaret Barr farm. In Geary district, Roane County, the United Carbon Co.'s No. 6 on the J. E. Keene farm is a gasser in the Big Injun sand.

Calhoun County

On the waters of West Fork, Lee district, Calhoun County, F. F. McIntosh completed his No. 1 on the Martha Morgan farm to the Injun sand, and it is showing for 250,000 feet of gas. In Clay district, Wirt County, the Liberty Supply Co. completed its No. 11 on the J. L. Beckner farm to the Mitchell sand, and it is reported good for about 3 bbls. a day.

On Leatherwood Creek, Big Sandy district, Kanawha County, the United Carbon Co. completed its No. 20 on the Osborne farm to the Wier sand and has a well making about 500,000 feet of gas and 5 bbls. of crude a day.

On Jordan Creek, Big Sandy district, Kanawha County, south of the first test on the L. Weaver farm, the United Fuel Gas Co. has completed a second test. It is a light gasser, showing a little oil with the tools in the hole. It will not be tested for oil unless it fills up and shuts off the gas.

In Sherman district, Boone County, the Pure Oil Co. has completed and shot in the Berea grit No. 237 on the Williams Coal Co.'s tract. It is a 10-bbl. pumper. In the same district, the same company's No. 3 on the White & Co. farm is a gasser in the same formation. In Washington district, the Hope Natural Gas Co. has a gasser on the J. D. and R. B. Allen farm. In the same district, the Owens Bottle & Machine Co. has a gasser on the J. W. McKinney farm. In the same district, the same company also completed a gasser on the Benjamin Pauley farm.

Doddridge County

In Grant district, Doddridge County, Trainer Brothers are building a rig on the J. D. Crabtree farm. In McElroy district, Tyler County, S. J. McIntyre is building a rig on the Benjamin McIntyre farm. In Geary district, Roane County, I. L. Storts has a rig up on the J. N. Keene farm. In the same district, the United Fuel Gas Co. has started to drill on the Michael Harold farm.

The South Penn Oil Co. has spudded in and started drilling its test on the S. P. and L. J. Lemaster farm, McElroy district, Tyler County. In Liberty district, Marshall County, Burley & Orndoff and others have rigged up for a test of the R. A. Teagarden lease. In the same county, and in Webster district, Fry & McCracken have spudded in and started drilling their test on the W. L. Doman farm. In DeKalf district, Gilmer County, McCall Drilling Co. has started to drill its No. 6 Riddle Brothers farm deeper from the Maxon to the Injun sand.

In Ripley district, Jackson County, the F. H. Parsons Oil & Gas Co. has a rig completed on the Dr. V. I. Castro farm. In Sheridan district, Calhoun County, Godfrey L. Cabot has started to drill on the J. S. Ferrell farm. In Lee district, Everett Starcher & Co. have started to drill on the G. W. Hardman farm.

Lincoln County

In Jefferson district, Lincoln County, the United Fuel Gas Co. is drilling on the Horse Creek Land & Coal Co. tract. In the same district, Roy & McComas are drilling on the Randolph Sias farm. In Barboursville district, Cabell County, Dunham & Titus are rigging up on the Guyandotte Country Club property. In Grant district, the Harshbarger Oil & Gas Co. is building the rig for a second test on the J. B. Elkins farm. In Carroll district, Lincoln County, the Empire State Oil & Gas Co. is rigging up on the Jesse Courts farm.

Southwest Pennsylvania

The best well reported from the southwest Pennsylvania district in some time, although small, was J. B. and C. C. Nuss, trustee, No. 2 on the Mrs. Ella Ray and others' farm, 2 miles west of Nineveh, Morris Township, Greene County. It was drilled to the Nineveh sand and is making 35 bbls. a day.

In Wayne Township, Greene County, the Carnegie Natural Gas Co. has a gasser in the Bayard sand at No. 4 on the Israel Yeager farm.

FOLLOWS GRANDFATHER

The press representative of the Republican National Committee, traveling with Senator Borah, bears a name famous in the oil country annals—that of Sam Jones, who is a grandson of Sam Jones, "Golden Rule Mayor of Toledo," and founder of the S. M. Jones Co., and son of the present head of that concern whose "Jones sucker rods" are known wherever oil is produced. Young Sam Jones seems to be following the political trend of his famed grandfather.

um gasoline and premium fuel oil With its non-residuum operation, instantaneously, without any mechanical construction adjustment, it produces the greatest known yield of gasoline from cracking, with no fuel oil

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MEN KNOWN IN OILDOM

Roy Owen West

Roy Owen West, of Chicago, recently appointed Secretary of the Interior to succeed Dr. Hubert Work, has been elected chairman of the Federal Oil Conservation Board and hereafter will preside over its meetings. Like his predecessor, Secretary West had no connection with the oil industry prior to his appointment. Now, however, besides being chairman of the Conservation Board, as Secretary of the Interior he is supervisor of oil and gas leases on Indian reservations, including the Osage, Five Civilized Tribes, Navajos in New Mexico and Shoshones in Wyoming. His duties make him the supervisor of the vast public domain, with all its oil resources.

Secretary West was born October 27, 1868, in Georgetown, Ill. He finished high school at the head of his class in that town and then attended DePauw University. He has an A. B., an A. M., and an LL.B. from that school. After graduation from DePauw Mr. West practiced law in Chicago and since 1902 he has been a member of the firm of West & Eckhart. In 1893 he became an assistant county attorney of Cook County. Two years later he was elected city attorney of Chicago. In 1898 he became a member of the County Board of Tax Review and he served as counsel for the board several years.

In 1904 Mr. West became chairman of the Illinois Republican Central Committee, a post he held for 10 years. He was a delegate to the Republican National Conventions of 1908, 1912, 1916, and 1928. He is a member of the Chicago Club, Union League of Chicago, Law Club, South Shore Country Club, Flossmoor Country Club, Lake Placid Club and the Quadrangle. He is a trustee of St. James Methodist Episcopal Church of Chicago.

PERSONAL PARAGRAPHS

Ward McGinnis, oil producer of Kansas, spent a few days in Tulsa last week.

* * *

Richardson Pratt, vice president of the Standard Oil Company of New Jersey, spent a few days in Tulsa last week.

* * *

Charles A. Markey, manager of oil field sales for the Link-Belt Company, was in Tulsa for a few days last week, before returning to his headquarters at Indianapolis, Ind.

* * *

F. D. Williams, president, and N. A. Newton, sales manager, of the National Transit Pump & Machine Company, Oil City, Pa., spent several days in Houston, Tex., calling on oil companies.

E. I. Hanlon, of the Chestnut & Smith Corporation, has returned to Tulsa after a vacation spent in California.

* * *

D. O. Bayless, head of The Texas Company's land and lease department in Fort Worth, Tex., was in Tulsa last week.

* * *

F. C. Buchanan, sales manager of the Columbia Tank Company, of Kansas City, Mo., was a Tulsa visitor last week.

* * *

N. C. McGowen, vice president of the Palmer Corporation, is back in Shreveport, La., from a protracted business mission in New York.

* * *

W. L. Connelly, vice president of the Sinclair Consolidated Oil Company, spent a few days in Tulsa last week, and is now back in New York.

* * *

Mr. and Mrs. Eric Hussey have returned to Petrolia, Ontario, from the Burmah fields, where Mr. Hussey has been drilling for the past four years.

* * *

V. R. Crouch, scout for the Pure Oil Company, who has been ill of typhoid fever for the past four weeks, is improving and expects to be back at work soon.

* * *

Charles Lawrence Baker, chief geologist of the Rio Bravo Oil Company, Houston, Tex., has returned from a trip over the western part of the State.

* * *

Charles Davis, sales representative of the Dresser Coupling Company of Bradford, Pa., was in Tulsa last week, and is making a tour of the Mid-Continent oil field.

* * *

E. B. Kimball, Oakland, Calif., independent operator with holdings not only in the United States but also in Mexico and Venezuela, was a visitor in Houston, Tex., for a few days.

* * *

Vern T. Whitney, of Toledo, has moved to Detroit, Mich., where he has been made general sales manager of the Wayco Oil Corporation, one of the larger distributing concerns in the East.

* * *

W. H. Hednett, formerly with the geophysical department of the Pure Oil Company, Houston, Tex., has accepted a position in the geological and land department of Ryeade Oil Corporation.

* * *

M. J. Grogan, vice president and general manager of the Louisiana Oil Refining Corporation, at Shreveport, La., has been elected a vice president of the Louisiana State Chamber of Commerce.

* * *

B. E. Hull, president of the Texas Pipe Line Company, Houston, Tex., initiated a new airplane purchase by the company by a hop to Chicago, with short stops at Tulsa and St. Louis, the past week.

* * *

C. E. Hathaway, of the Stanley Belting Company, who has been in England for the past seven weeks, will return to the United States in time to visit the International Petroleum Exposition in Tulsa.

* * *

Frank Braybrook and family have returned to Petrolia, Ontario, from a trip to England and Europe. Mr. Braybrook will leave shortly for Peru, where he is on the International Petroleum Company staff.

* * *

J. Redfern, formerly with Power Manufacturing Company, and later with the Weber Engine Company, is now sales manager of The Creeper Wheel Company, Reading, Pa., manufacturers of tracklaying trailers.

* * *

Talbot C. Wildman, president of the Wildman Petroleum Company, of Fort Worth, Tex., is back on the job after a summer vacation spent touring the eastern states and Canada, and a visit at his former home in Connecticut.

* * *

E. E. Routh has been appointed manager of sales for the Mathieson Alkali Works, Inc., New York. Mr. Routh has been a member of the Mathieson organization for 30 years, with the exception of four years in college, having started in as office boy at the Saltville plant at the age of 11.

Don Mann, of the oil field sales department of the Westinghouse Electric Company, came up from his headquarters at Dallas, Tex., last week for a brief visit in Tulsa.

* * *

D. B. Harris, general manager for the Humble Oil & Refining Company at Shreveport, La., has returned to his office from a conference of Humble officials at Houston, Tex.

* * *

W. F. Chisholm, supervisor of the minerals division of the Louisiana Conservation Department, has returned to Shreveport, La., from the A.I.M.E. meeting in Boston, Mass., and a vacation visit at his old home in Nova Scotia.

* * *

Jeremiah Scully, for many years active in the Haskell district of Oklahoma during the time of the Boynton Field development, was a Tulsa visitor last week. Mr Scully for the past few years has been a resident of California.

* * *

Lacey Walker, assistant treasurer of the American Petroleum Institute, is making a trip over the Mid-Continent and Rocky Mountain areas, visiting Tulsa, Fort Worth, Dallas, Houston, Shreveport, and Casper before returning to New York.

* * *

The wedding took place at Vancouver recently of Neil McQueen, son of Mr. and Mrs. A. M. McQueen of Toronto, and Miss Flora Barbara Miles, daughter of Mr. and Mrs. H. R. Miles of Lethbridge, Alberta. The groom is a geologist on the Imperial Oil, Ltd., staff.

* * *

Carl E. Klitgaard, manager of construction and repair division of the Standard Shipping Company marine department of the Standard Oil Company of New Jersey, was in Los Angeles recently looking over the local harbor but has since left for the home office.

* * *

Sylvester Dayson, plant superintendent for the Lion Oil Refining Company since the refinery was built at El Dorado, Ark., several years ago, was elevated to a vice presidency of the company by the board of directors at their recent meeting in Kansas City.

* * *

George H. Tabor, vice president, and Charles B. Buerger, general manager of the Gulf Refining Company, Pittsburgh, Pa., have been visiting the Gulf Coast on their annual tour of the Gulf's offices. While at Port Arthur they were given a banquet at the Gulf Refining Company's main office dining room by the old employes.

* * *

P. McDonald Biddeson, vice president of the Natural Gas Producing Company of Louisiana, of Bastrop and Monroe, La., has resigned from the company and established offices in Monroe as a consulting engineer specializing in the production and transportation of natural gas, and construction and operation of natural gasoline plants and carbon plants.

* * *

H. M. Backus, oil scout of Cleveland, Ohio, who has been spending his winters in Florida and Louisiana, while motoring through Toledo, stopped off to visit old friends. Mr. Backus was on his way to the Dundee Field, in Monroe County, Michigan, then will spend some time among the lakes in fishing and recreation. He was accompanied by Mrs. Backus, a son and daughter-in-law.

* * *

Dr. H. Bruner, Director General of Mines, Republic of Argentina, South America, made a visit recently to the United States Geological Survey in Casper, Wyo., with the chief of the conservation branch of the survey, Herman Stabler of Washington, and Deputy Supervisor Ray O. Armstrong of the Casper offices. Doctor Bruner confined his observations chiefly to a study of water problems. From Casper he left for the Pacific Coast.

* * *

F. A. Heberling and L. A. Shearer, of Ponca City, Okla.; W. B. Pardee, of the Belgian Shale Company, of St. Louis, Mo.; W. P. Simmons, of Sistersville, W. Va.; Ray Cole, of Florida, and H. E. Ball, of Tampa, Fla., arrived at Owensboro, Ky., to look over conditions in the western Kentucky fields. Mr. Ball is associated with the Kelsey Oil Company, which recently purchased a one-sixteenth interest in the Mahloskey lease.

Natural Gas Developments

RECORD OUTPUT IN 1927 MARKETED AT REDUCTION

The history of the natural gas industry in 1927 was similar to that of the petroleum industry, as a record output was marketed at reduced prices, states the United States Bureau of Mines. The total amount of natural gas produced and delivered to consumers in the United States in 1927 amounted to the huge total of 1,445,428,000,000 feet, an increase over 1926 of 132,409,000,000 feet, or 10 per cent. During the year, 184,000,000,000 feet of gas was piped to Canada and Mexico, which, when deducted from the total production, leaves 1,445,244,000,000 feet as the total amount of natural gas consumed within the United States in 1927. The value of the gas per thousand feet at the wells decreased from 9.5 cents in 1926 to 8.8 cents in 1927, and at points of consumption from 22.9 cents in 1926 to 22 cents in 1927.

In 1927 there were 3 984,000 domestic consumers of natural gas in the United States, who used in that year a total of 296,036,000,000 feet of natural gas. This represents an increase in the number of domestic consumers of 253,000, of 7 per cent, but an increase in total consumption of only 2 per cent. The average consumption per domestic consumer was lower for the fifth successive year, and in 1927 amounted to 74.300 feet, compared with 77,500 feet in 1926. This decrease in average consumption is probably the result of more efficient use. The average price paid for natural gas by domestic consumers in 1927 was 60.8 cents, as compared with 58.4 cents in 1926. As an illustration of the steady increase in the price paid by domestic consumers for gas, it may be cited that the 1927 price was very close to twice the 1917 price and that the last decrease in average price occurred in 1908. On the basis of the consumption and price data given above, the natural gas bill of the average domestic consumer in 1927 was $3.76 per month, or $45.17 for the year. Ohio continued to lead the states from the standpoint of number of domestic consumers, followed by California and Pennsylvania. Only two states, Indiana and Missouri, reported a decrease in number of domestic consumers.

The order of the large natural gas producing states was materially changed in 1927. Oklahoma retained first place, but Texas moved from fourth to second place and Louisiana from fifth to fourth, displacing West Virginia. Production in Oklahoma registered a 14 per cent gain in 1927, chiefly as the result of gas produced incidental to the intensive drilling for oil at Seminole. Texas, by virtue of a 45 per cent increase in output, made the best showing among the major gas-producing states.

The total consumption of natural gas by industrial users in 1927 amounted to 1,149,208,000,000 feet, an increase over 1926 of 12 per cent. This total was di-

(Continued on Page 88)

LETHBRIDGE GAS SERVICE

CHATHAM, Ontario, Sept. 29.—The plant of the Canadian Western Natural Gas, Light, Heat & Power Co. in Lethbridge, Alberta, has been improved this season by the addition of 1 mile of mains, making a total of 23½ miles. A warehouse and supply depot has been constructed to facilitate drilling operations and maintenance of lines in southern Alberta. The company has established a service department to assist its customers in efficient use of natural gas. Many new connections have been added this season, and consumers in Lethbridge now total approximately 1,600. R. S. Winter is local manager.

GAS AWARD ANNOUNCED

The executive board of the American Gas Association announces the establishment of the Charles A. Munroe award to provide an annual financial recognition for any person who, in the opinion of the executive board makes the most outstanding contribution during the year to the general interests of the gas industry. The earnings of a fund of $10,000 will be available for this purpose.

Contributions to the industry's advancement will include the following: Research, invention, operating methods or practices which reduce costs of manufacturing or distribution, improved distribution or other service, increased sale of gas, development for new uses of gas, improved employe and public relations, promotion of safety, development of improved accounting practices, widening the field of gas-making materials, new methods of manufacture, finance, publicity, new gas works products and by-products, rates, etc.

NEW GAS LABORATORY IS OFFICIALLY OPENED

The new building of the American Gas Association testing laboratory at Cleveland, Ohio, was dedicated and officially opened on September 13. Exercises participated in by leaders in the industry marked the occasion.

The dedicatory service was conducted by Oscar H. Fogg, president of the association, who unveiled a bronze tablet.

The new laboratory is equipped with every conceivable device for testing gas and gas appliances.

"The laboratory is dedicated to the users of gas service," said Mr. Fogg. "It is not sufficient that we should merely distribute a product that measures up to the highest standards. It is necessary also that the appliances for the utilization of our product be made safe and efficient and that the entire chain of our service be linked together according to standards. Hence the laboratory."

The laboratory engineers, working under the direction of R. M. Conner, now are studying 64 separate problems, involving uses of gas. These include study of the flow of gas in pipes, domestic laundry costs, bread baking, brass annealing, house cooling, house heating, linotype burners, varnish cookers, gas refrigeration and others. Since the laboratory's inception, they have tested many types of gas-burning appliances for safety, efficiency and economy, co-operating with hundreds of manufacturers and United States Government bureaus.

As part of the two-day program, manufacturers of many of these gas-burning devices met for the first of a series of annual conferences.

WINNFIELD, LA., FRANCHISE

SHREVEPORT, La., Sept. 29.—The city council of Winnfield, La., has awarded franchise to the Southern Pipe Line Co., a subsidiary of the Southern Carbon Co., of Monroe, to supply Winnfield consumers with gas. The Southern Pipe Line Co built the first line taking gas out of the Monroe Field to other towns than Monroe and West Monroe, an 8-inch line to Alexandria, and contract has been awarded for 21 miles of 6-inch welded line from Tullos, in the Urania oil field, to Winnfield to cost approximately $25,000. The Southern Pipe Line Co.'s franchise agreement, it is understood, calls for immediate construction and completion of the line in 45 days from date.

KANSAS NATURAL GAS COMPANY IS DISSOLVED

Incident to the policy of grouping all natural gas activities of the Empire Gas & Fuel Co. under one organization—the Cities Service Gas Co.—officials of the Empire Companies have announced the dissolution of the Kansas Natural Gas Co. The dissolution of this pioneer natural gas company in the Mid-Continent fields recalls some interesting history in connection with the development of the gas industry in Kansas, Oklahoma and Missouri.

Found in 1904 by the late T. N. Barnsdall, the old Kansas Natural Gas Co. was an important factor in developing the natural gas industry to the position of prominence it now occupies in the Middle West, and its formal passing was not effected without a few tinges of regret on the part of the pioneer gas men.

Misconception of rate structures—a common occurrence in the pioneering days of the industry, coupled with fast depleting sources of supply and lack of new capital to extend its facilities into the newly developed gas field, threw the Kansas Natural into the hands of receivers on September 22, 1914, and it was not until January 1, 1921, that the receivership was terminated.

In October, 1916, during the period of receivership, the Cities Service organization acquired controlling interest in the Kansas Natural Gas Co. and began laying the foundation for the natural gas company now represented by the Cities Service Gas Co. with its network of more than 3,000 miles of natural gas pipe line, equipment and vast acreage holdings that serve more than 145 cities and communities in Kansas, Missouri and Oklahoma with approximately 150,000,000 feet of gas daily.

Following termination of the receivership, the property was held until May 1, 1922, by the Cities Service organization with headquarters in New York and at that date was formally transferred to the Empire Gas & Fuel Co.

ARKANSAS OIL AND GAS MAPS

SHREVEPORT, La., Oct. 1.—The new oil and gas map of Arkansas prepared by the State Geological Department with the co-operation of the United States Bureau of Mines has been published and is being distributed by the state department. Drawn on a scale of 3 miles to the inch and published in two parts, the map is 7 by 8 feet and shows the location, depth and permit number of every well drilled in the State since the oil and gas conservation division began functioning in 1921, and such other wells drilled before that time on which the department has been able to get official data. It also shows the name of the operator drilling the well and the name of the lease. The United States Geological Survey will print another map the state department is at work on and for which all data has been assembled. It will show the geological strucfures of the State, location of mines, quarries, oil and gas wells, etc., and all oil and gas pipe line and electrical transmission lines in the State and is expected to be ready for distribution about the first of the year.

WYNNEWOOD-PERNELL LINE

The Lone Star Gas Co. is laying an 8-inch gas pipe line from Wynnewood to Pernell, Okla., to replace a 4-inch line. From 125 to 175 men are engaged in the work, making their headquarters at Wynnewood.

NEW PENNSYLVANIA COMPANIES

HARRISBURG, Pa., Sept. 29.—The application of the Ridgway Natural Gas Co. and the St. Mary's Natural Gas Co. for approval of their incorporation and for the right to operate in Elk, Forest, Jefferson, Cameron and McKean Counties was heard by the Public Service Commission.

The proposed new companies, of which George E. Welker, Oil City, is president, seek permission to buy the Ridgway Light & Heat Co. and the St. Mary's Gas Co., respectively. Welker testified that the Ridgway company would supply gas to the boroughs of Ridgway and Johnsonburg and villages of Shawmut, Brandy Camp, Brockport, Portland Mills and Horton, and Spring Creek Townships, Elk County. The St. Mary's company would serve the communities of St. Mary's, Elk County, and Emporium, Cameron County.

B. H. GARDNER NAMED AS DIRECTOR OF SALES

Effective October 1, B. H. Gardner has been appointed director of sales of Columbia Engineering & Management Corp. Mr. Gardner will supervise and co-ordinate the new business activities, both gas and electric, of Columbia System properties, in co-operation with the executives and commercial departments of the various companies. His headquarters will be in the Columbia offices at Columbus, Ohio.

Mr. Gardner has had a wide experience, his first connection, from 1906 to 1912, having been with the Dayton Power & Light Co., a subsidiary of the present Columbia System. For nine years he was with the Connecticut Light & Power Co. For the past seven years he has been connected with the Northern Indiana Public Service Co.; for three years as local manager at Lafayette, and for the past four years as assistant to the vice president at Hammond, Ind. Mr. Gardner is a member of the American Gas Association. This year he is serving as chairman of the water heating committee and as a director of the Indiana Gas Association.

GAS NOW PUT TO 21,000 USES

The use of gas in American industry has steadily increased. Gas is used in thousands of manufacturing operations requiring the use of heat. There are now 21,000 uses to which gas is put in industry, according to George E. Whitwell, general manager of the Philadelphia Co., Pittsburgh.

In Milwaukee a gas furnace 190 feet long treats 25 tons of malleable iron castings each day. Syracuse, N. Y., has a 385-foot continuous carburizing furnace, said to be the largest of its type in the world.

There are 24 continuous furnaces in a large Toledo, Ohio, automobile plant, which consume 60,000,000 feet of gas monthly. The operations of these furnaces include annealing, hardening, carburizing and heating for forging. Numerous automobile plants, including those of the Ford Motor Co., use gas extensively in annealing forgings and castings.

GAS FOR JENNINGS, LA.

HOUSTON, Tex., Sept. 29.—Laying of mains to distribute natural gas at Jennings, Lake Charles, Welsh and other southwest Louisiana cities will begin within 60 days, according to information received from Belchic & Laskey of Shreveport, La., holders of the franchises.

Parkersburg

HAS SERVED THE OIL FIELDS OF THE WORLD FOR THIRTY-ONE YEARS

Steel Derricks

THE strength of any steel derrick depends largely upon the strength of its joints. Two exclusive and patented features of Parkersburg Steel Derricks that insure greater strength are *Slotted Joints* and *Slot Bolts.*

From crown block to base plates, the weight is carried *straight* down the derrick legs, and there never is a shearing strain on the bolts.

With these exclusive and patented joint construction features, Parkersburg Steel Derricks are easier to erect and to dismantle, and with greater speed.

For every pumping and drilling requirement, Parkersburg Steel Derricks have demonstrated, in the oil and gas fields of the world, their ability to carry the heaviest of loads.

For a strong, rigid, easily and quickly erected derrick specify Parkersburg—there are various types and sizes available to meet your particular requirements. Send for Section "D," Catalog 26.

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Check the equipment in which you are interested, tear out and return this page, with your name and address, to us, and we will send you complete information on the items checked.

See our Exhibit at the International Petroleum Exposition and Congress—Booths 126 and 127 Texas Building.

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

PRODUCTION VALUES

Please inform me in regard to the following questions:

(a) The scale or value of flush production per barrel in the relation to the price of crude oil in a well-known field as Cushing, Bristow, etc.

(b) The value of the same production when settled.

(c) A method of calculating its value at a point between the flush period and the settled period.

Please also advise me of literature dealing with this subject.

I am enclosing addressed envelope for direct answer if convenient.—F. L. B.

The valuation of oil properties is a difficult and highly specialized branch of petroleum engineering requiring special training and much experience. Of course there are many transactions based upon guesses and good or bad judgment, but obviously it is better to employ sound principles of valuation.

The valuation of any oil property should be based primarily upon an estimation of the recoverable oil reserves on that property. The cost of recovering the oil and the time that it will take are other primary considerations. Since it will take years to recover the oil, it is necessary to apply deferment charges because a sum of money that we probably can earn 10 years from now is not worth as much as that same amount of money actually in hand today. The rates of deferment discount range all the way from 6 per cent per year up to 10 per cent.

It is difficult to estimate accurately the recoverable oil reserves during the flush production of a field, but this is sometimes possible by the decline curve method.

There is no proportional scale of value between a property in the flush production period and that same property after it reaches a settled stage of production. The value of the property at any stage of production depends upon the primary considerations previously outlined, and these are different for every property. This applies equally to the valuation of the property at any time between its peak production and its settled production.

A rule-of-thumb method of valuing oil properties that have reached the settled production stage is to assume a value of $1.000 per barrel per day for each dollar in the price of the oil. If a property is producing 55 bbls. of oil worth $1.75 per barrel then its value in dollars, according to this method, would be 55 × 1.000 × $1.75 = $96.250. This method gives only the merest approximation upon the value of a property and is not recommended.

There is an extensive literature upon the valuation of oil properties. Among the many valuable books and papers upon the subject a few are listed for your information at this time:

United States Treasury Department Manual for the Oil and Gas Industry, issued through the Income Tax Unit of the Bureau of Internal Revenue, Washington, D. C.

"The Decline and Ultimate Production of Oil Wells with Notes on the Valuation of Oil Properties," by Carl H. Beal, United States Bureau of Mines Bulletin 177.

"Estimation of Underground Oil Reserves by Oil Well Production Curves," by Willard Cutler, Jr., United States Bureau of Mines Bulletin 228.

"The Valuation of Oil and Gas Lands," by Robert Wesley Brown, published by the McGraw-Hill Book Co., New York.

"Valuation of Oil-Producing Properties," by J. L. Darnell, The Oil and Gas Journal, January 1, 1925.

"Oil Land Development and Valuation," by R. P. McLaughlin, published by the McGraw-Hill Book Co., New York City.

VACUUM WELL A FREAK

On one of our company's leases a well shows vacuum for no apparent reason. This is the only well that shows vacuum. Paper held close to the casinghead is sucked and held against the openings by the vacuum. All the other wells on the lease are normal pumpers, and so far as we know do not show vacuum. The nearest vacuum plant is on a lease a half mile from this lease. Can you offer an explanation for this strange occurrence? —R. R. H.

It is not probable that this well is being affected by the vacuum plant you mention on a lease half a mile away. The cause is probably nearer at hand. It is not probable that drainage of oil from the sand would cause a vacuum because the vapor pressure of the lighter constituents of the oil would not permit this. We therefore must look for some near-by mechanical cause.

Are there any gas engine powers on or close to this lease using casinghead gas? If so it is probable that they are trying to pull more gas into their intakes than the wells can supply. Under such conditions you would inadvertently pull a vacuum on the field.

One large company conducting repressuring operations with large gas engines had this experience. It was putting pressure on its key wells and vacuum on its pumping wells because there was not enough casinghead gas to supply the gas engines without suction. It was necessary to purchase gas to run these engines. If you find this is occurring on your lease you should obtain an adequate supply of gas for your powers. It is hoped you will advise this department of what you find to be the cause of the conditions you describe.

TWIN WELLS BEST

We have an oil well in the Gordon sand at a depth of 2,500 feet producing several barrels of oil a day, together with a small quantity of gas. We have drilled this well down from the Gordon sand to the fifth sand, which is an approximate amount of 125 feet, and have struck a fairly nice amount of gas in this sand and we are now faced with the dilemma of being able to save and produce this well from both the oil sand and the gas sand

We had thought at first of putting the string of tubing in to the bottom of the well, allowing the oil from the upper sand to run down to the gas sand and then pump out from the bottom, but this method has several objections. In the first place, the line pressure which we have to go against in marketing the gas from the gas sand is such that if kept on the oil sand would make too much of a pressure and also the amount of fluid, both oil and water, running down over the gas sand would in my opinion have a tendency to gum up and paraffin the gas sand and materially hurt the production of this well from this producing horizon, as well as keeping the fluid constantly on the sand.

The only other possible solution that I see would be to put a string of tubing in on a packer below the oil sand, producing the gas through this string of tubing and then put a second string of tubing in this same well to the depth of the oil sand and pump the well from this depth.

Theoretically this method would solve the problem, but practically, as you can readily see, it would have several objections and I do not know of any case where this method was employed.

If you can offer any suggestions that might help us in this case, we would surely appreciate it.—H. H. B.

You have presented an unusual problem and one that is not easily solved. Your question has been discussed with several leading petroleum engineers, all of whom agree upon the difficulties involved in producing from the oil sand and a lower gas sand under the conditions that you outline.

You can of course run tubing to your gas sand, set a tubing packer below the oil sand and run a second string of tubing through which to pump the oil, but as you say, there will be many difficulties in doing this.

You might run 2-inch tubing to the gas sand, set a tubing packer below the oil sand, run a string of three-quarter or 1-inch tubing to the oil sand, and put enough gas pressure down the well from the casinghead to flow the well, provided there is enough formation pressure to satisfy the conditions of flow.

The best way to operate here would be to have twin wells, one for oil and one for gas.

VALUE OF CORE DRILLING

In your question and answer columns of the August 23 issue, I note with interest what you say about the estimation of oil reserves recoverable by repressuring. Would it not be a great help to obtain cores of the oil sand for actual examination and determination of the oil content? Do you know of any methods of obtaining cores of oil sands without washing the oil out of the sand?—W. W. S.

The determination of the amount of oil actually remaining in a known volume of oil sand, together with experimental studies to determine what part of the remaining oil can be recovered from the sand by repressuring would undoubtedly have value in estimating oil reserves recoverable by repressuring.

The mere determination of the amount of oil remaining in a known volume of oil sand will not solve our problem unless we can tell what proportion of that oil we can get out by repressuring. We can obtain much information along these lines of course, by experimental studies such as those being conducted by the United States Bureau of Mines experiment station in Bartlesville, Okla

In regard to the value of the information furnished by the core drilling of oil sands, we quote M. J. Kirwan (Bureau of Mines bulletin 243, pages 127 and 128) as follows:

"The so-called saturation of an oil sand with oil or the percentage of the pore space of the sand which is occupied by oil is hard to determine from cable or rotary tool drill cuttings. A sand may contain both oil and gas in its pores and when part of the oil has been extracted from the sand it is very difficult to estimate how completely the sand is drained. With chunk samples this can be much more intelligently estimated, but, as stated before, it is always possible that the chunk sample represents an exceptionally well-cemented rather than an average part of the sand. If a complete core is obtained through the pay sand, however, a clearer and more accurate idea of the degree of saturation can be obtained.

"Information obtained by core drilling probably affords the most reliable basis for a future-production estimate in a new field before production records are available from which decline curves can be constructed. For example, if a well is draining a sand of open texture it may have a large initial production but it may be short lived. On the other hand, a well which produces from a relatively fine-grained hard sandstone may have a smaller drainage area than the well which drains the open-textured formation, but may have a well-sustained production. The decline curve of the second well thus might start from a lower point of initial production than that of the first well, but be more sustained and thus indicate a larger future production. The detailed information concerning the actual sand conditions which may be obtained by examination of a continuous core from a few scattered wells will be much more authoritative than the information usually obtained from many wells drilled by either cable-tool or rotary methods.

"In a new pool the probably total amount of recoverable oil should largely control development methods. For example, accurate knowledge of underground conditions often enables an operator to guard against seepage of underground water into the oil measures. Comprehension of underground conditions assists an operator in spacing his wells to obtain the maximum ultimate production at minimum drilling expense.

"Infallible estimates of oil reserves cannot be made from core samples. To estimate reserves with reasonable accuracy requires ingenuity and care on the part of the engineer. Appraisal of all factors bearing on the recovery of oil from underground reservoirs must be made. Exact information concerning oil sands from which wells obtain their production, which is obtainable from core samples, will be of great assistance in arriving at more accurate estimates."

In regard to obtaining samples of oil sand without washing the oil from the sand, we are informed that some of the manufacturers of diamond drill equipment are making drilling equipment especially designed to meet this requirement. This department will be glad to supply you with more specific information upon this subject by letter if you wish it.

Back in Hard Service with an Eleven Foot Stretch!

The superior strength of Pittsburgh Seamless Steel Pipe gives it the extra tenacity to hold it firmly together far beyond the point where ordinary pipe would snap. Its high carbon, uniformly tough steel is repeatedly bringing it through the most torturing strains.

Recently a California operator, after weeks of drilling, fishing and reaming in the tough Ventura County formation with a string of 3½-inch Pittsburgh Seamless Drill Pipe, stuck his tools at 7070 feet. For two weeks he circulated oil and worked the pipe under continuous tension; he then discovered a permanent eleven foot stretch in the string, but no signs of weakness, so continued to use it.

You may confidently expect comparable service from Pittsburgh Seamless Casing with its ⅓ greater factor of safety over welded pipe. The world's record for 8 ⅝-inch 36 lb. casing is a 6054-foot string of Pittsburgh Seamless, in this same Ventura County, California.

Pipe Storage Yards at Memphis, Tenn. San Pedro, Cal. and Jobber's Storage at other points for SERVICE

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EQUIPMENT AND SUPPLIES

BLOWOUT PREVENTER ON INDIAN TERRITORY WELL

The first Regan hydraulic blowout preventer installed in the Mid-Continent area is in service at the Indian Territory Illuminating Oil Co.'s No. 1 Oklahoma City well, south of Trosper Park. W. A. Pitts, factory representative of the Regan Sales Co., supervised installation of the appliance.

The preventer resembles a large valve, fitting on top of the casing with the drill stem working through the valve. Large rubber rings press against the drill pipe and when pressure is inserted from below, the rubber flanges or rings are pressed tightly against the pipe. The greater the pressure the greater the hold, the rock or gas pressure forcing the rubber tight around the pipe. The device works automatically and can be used with gas, water or oil.

The valve is built to withstand enormous pressure, and was installed at the Indian Territory company well when it blew in a few weeks ago with 47,700,000 feet of gas pressure and rock pressure of 1,720 pounds to the inch.

HARRY L. NOLAN

Harry L. Nolan, for many years sales manager of the Continental Supply Co., is now head of his own concern, the

Harry L. Nolan

Nolan Sales Corp., with headquarters in Tulsa, and a branch office and warehouse in Oklahoma City, Okla.

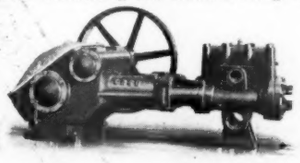
The Nolan Sales Corp. handles Powell valves, American Manufacturing Co.'s "OK" jacks and surface equipment, and the Hamilton Rubber Co. belting. J. M. Kelly, formerly of the Continental Supply Co. sales department, is associated with Mr. Nolan in the new concern.

GASO ANNOUNCES NEW PUMP FOR OIL FIELD

The Gaso Pump & Burner Manufacturing Co., of Tulsa, has announced an enclosed type, self-lubricating all Timken-bearing pump, designated as Figure 1,508.

Both driveshaft and chankshaft are mounted on Timken tapered roller bearings. Lubrication is automatic from a single oil reservoir, all working parts running in a continual oil bath. The power end is enclosed in a dust-proof crankcase, protecting the mechanism from dust, dirt and moisture. Drive is by continuous tooth herringbone gears which the manufacturers state is the quietest and most efficient pump drive as yet developed.

A double stuffing box arrangement between the fluid and the power ends causes any water seepage from the fluid end to drain outside instead of into the crankcase. Connecting rod crank bearings are



babbitt shells, removable, and easily adjustable to wear.

The new pump is offered with three types of fluid end, valve pot type, 7-inch suction type, and interchangeable liner type. The illustration shows the last-named type. Capacity of this type varies from 63 bbls. per hour at 800 pounds pressure, with 2½-inch liner, to 250 bbls. per hour, at 250 pounds pressure, with 5-inch liner.

BUSINESS NOTES

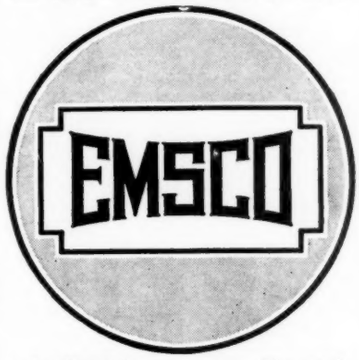
Botfield Refractories Co., Philadelphia, Pa., manufacturers of Adamant fire brick cement, Adamant-Adachrome and the Adamant gun, announce appointment of W. E. Tierney as its representative in the South and Southwest, with headquarters in New Orleans.

The Ross Heater & Manufacturing Co., Inc., Buffalo, N. Y., has opened a branch office in Philadelphia, Pa., under the direction of J. W. Spencer, Jr. The company manufacturers heat exchangers, condensers, feed water and hot water heaters, crosshead guided and internally guided expansion joints, etc.

The W. B. Connor Co., Inc., with its subsidiary division, the General Air Filters Corp., is installed in its new plant recently acquired in Lincoln Park, N. J. A sales office will be maintained in New York. The companies manufacture air cleaning and conditioning equipment, steam traps and the new Dubs pump for viscous liquids.

RED BALL NOW MARKS EMSCO SERVICE CARS

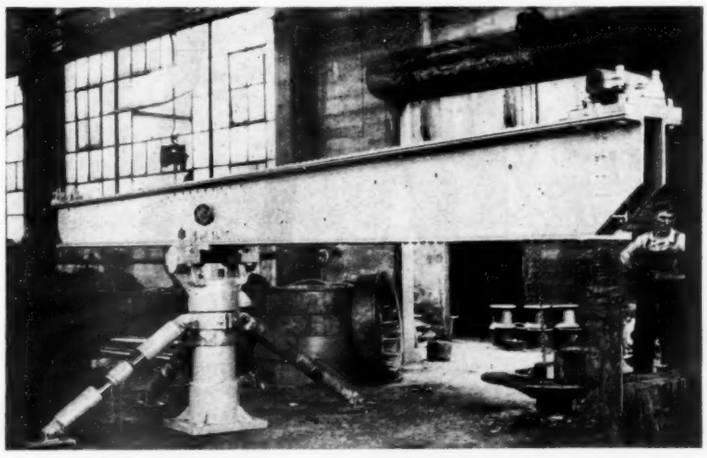
The Emsco Derrick & Equipment Co. has adopted a large red ball with the name Emsco in green as an identification mark for all its authorized service



and salesman's motor cars. The mark appears on the right side of the windshield and on the rear glass or on the spare tire cover of each car and is plainly visible at a great distance. It is believed by the company that this plan of identification will prove of great value.

NEW DREADNAUGHT STEEL WALKING BEAM

The Beaumont Iron Works Co. of Beaumont, Tex., has put on the market a new type of steel walking beam, constructed with two side channels with top and bottom plates securely riveted to the channels forming a box girder or tube. A central sway and shearing brace is placed between the two side channels:



This truss brace is made from I-beam or channels and runs from a point near the center adjacent to the upper edges in a downward direction on either side near the ends of the beam. It forms both a truss and lateral brace fastened to the side channels along its entire length. In addition a vertical brace is riveted in the center and at each end correlating the main truss brace and forming a single unit in construction.

The reported advantage of this construction is that the longitudinal brace prevents end sway and whip of the beam as well as acting as a truss and lateral brace to increase the shearing strength particularly at the center where the greatest strain is produced in operation. The braces, both lateral and vertical, protect the web of the channels from crushing.

There are no outside projections to interfere in any way with installation of the beam or the use of a movable counterbalance when the beam is used for pumping. This beam is made in two sizes adapted for drilling or pumping.

NEW WELDING MACHINE FEATURES TO BE SEEN

Two Wilson Model S welding machines, combining many new operating features, will be exhibited in the welding section at the National Metal Exposition (Steel Treaters Show) to be held at the Commercial Museum, Philadelphia, Pa., October 8 to 12. These two machines are the Wilson Type 200 amperes, one-arc motor-driven unit, with welding range of 10 to 300 amperes, and the Wilson Type 200 amperes, one-arc gasoline engine-driven unit, with welding range of 10 to 300 amperes.

These Wilson welders are equipped with the new control panel, exclusive with Wilson Model S machines. There are no live parts on the front of this panel. A new rotary switch, together with a new design of field rheostat, afford very fine adjustments of the welding current. The machines are adapted to a heavy current and large diameter electrodes for rapid depositing of metal, and also to a short arc with exceedingly close regulation of welding current for strength welding and repair work. Each machine is a complete, self-contained unit, capable of welding the thinnest sheet metal the electric arc can handle, and equipped to give full welding range without extra apparatus or extra cost. A wide welding range, rugged construction, perfect commutation, narrow frame and unusual portability give both machines remarkable adaptability to various kinds of welding work.

Besides the two Wilson Model S welders, there will also be exhibited Wilson "Color-tipt" welding wire and Wilson welding accessories. Various grades (analyses) of the wire will be displayed.

At the Wilson booth and representing the Wilson Welder & Metals Co. will be T. B. Hasler, president; E. D. Bransome, vice president; Alexander Churchward, technical director; J. A. Quarmby, sales manager; Harry Schemm, demonstrator. In addition, there will be representatives from Joseph T. Ryerson & Son, Inc., and Peter A. Frasse & Co., Inc., Philadelphia distributors.

TRADE LITERATURE RECEIVED

How Oakite is used in various kinds of cleaning jobs is told in the current number of "Oakite News Service," published by Oakite Products, Inc., New York.

W. C. Norris, manufacturer, of Tulsa, is sending out diagrammatic sketches illustrating the construction of two oil field devices, a heavy pull rod counterbalanced multiplier and an extra heavy swing.

Uses of the caterpillar tractor in performing difficult tasks are told and pictured in "Caterpillar Magazine," published by the Caterpillar Tractor Co., San Leandro, Calif.

Bulletin No. 709, issued by Templeton, Kenly & Co., Ltd., Chicago, illustrates the simplex pipe pushing jack, a new tool for pushing water or gas pipe, pipe for electrical service or pipe for oil heating supply under paved streets or alleys or under gardens or lawns.

The American Manganese Steel Co., Chicago, has issued an attractive pocket-size brochure entitled "The Manganese Steel," describing Amsco Maganese steel and giving its history, advantages and applications.

The "Harvester World," published by the International Harvester Co., Chicago, is devoted to McCormick-Deering industrial tractors and equipment.

The new Superheater catalog No. 304, issued by the Foster Wheeler Corp., New York, consists largely of illustrations of notable superheater installations, along with a brief history of Foster superheaters and their application to many types of boilers.

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889,198,722 BBLS. PRODUCED IN 12 MONTHS ENDING AUGUST 31

By James McIntyre

Crude oil production in the United States in August was 75,987,212 bbls. or 956,120 bbls. in excess of the production in July.

In the 12 months ending August 31 the production of crude in the United States was 889,198,722 bbls. This is the lowest production for a 12-month period since the 12 months ending in August, 1927, during which the production was 883,697,043 bbls.

Oklahoma's increase in August over July was the most pronounced of any of the producing divisions in the United States. The development of the St. Louis Pool in Township 7-5, Pottawatomie County, was the cause of this increase. In July Oklahoma produced an average of 606,758 bbls. per day, while in August it increased to 651,474 bbls. which more than offset declines in other divisions. The great West Texas area which produced 10,678,801 bbls., or 344,477 bbls. per day as an average for July, increased only 4,772 bbls. to 349,249 bbls. per day in August. Kansas, Arkansas, North Louisiana, Texas Panhandle, Central Texas and California were important divisions showing a decline in production in August.

Producers in California and West Texas appeared to have had a better grasp of the producing situation than their Oklahoma brethren as they very carefully kept their immense potential production within bounds, while unrestricted drilling in the St. Louis Pool in Oklahoma stopped the decline in Oklahoma and sent the State's production curve upward.

Following are the production figures for the pools in the Mid-Continent, Gulf Coast and Rocky Mountain Fields and a summary by producing divisions of production in the United States, with the eastern fields estimated, and subject to minor correction:

SUMMARY BY PRODUCING DIVISIONS
Crude Oil Production in the United States in August, 1928

	Dy. av. (b ls.)	Month (bbls.)
Oklahoma	651,474	20,195,694
California	627,255	19,444,899
Texas	716,170	22,201,257
Kansas	101,518	3,147,058
Arkansas	87,477	2,711,787
Louisiana	71,667	2,221,677
Montana	10,600	328,600
Wyoming	61,596	1,909,476
Colorado	7,568	234,608
New Mexico	2,876	89,156
Eastern fields*	113,000	3,503,000
Total August	2,451,201	75,987,212
Total July	2,420,358	75,031,092
Difference	30,843	956,120

*Estimated.

MID-CONTINENT FIELDS

	Dy. av. (b ls.)	Month (bbls.)
Kansas	101,518	3,147,058
Oklahoma	651,474	20,195,694
North Texas	101,651	3,151,181
Central Texas	48,410	1,500,710
West Texas	349,249	10,826,687
Panhandle Texas	63,236	1,960,316
East Central Texas	23,324	723,016
Arkansas	87,477	2,711,787
North Louisiana	40,200	1,246,200
Total August	1,466,539	45,462,709
Total July	1,418,293	43,967,091
Difference	48,246	1,495,608

GULF COAST AND SOUTHWEST TEXAS

	Dy. av. (b ls.)	Month (bbls.)
Gulf Coast (Tex.-La.)	135,301	4,194,356
Southwest Texas	26,466	820,468
Total August	161,767	5,014,824
Total July	167,715	5,199,164
Difference	5,948	179,452

OKLAHOMA
Daily Average and Monthly Production in August, 1928

	Dy. av. (b ls.)	Month (bbls.)
Washington County	5,439	168,609
Nowata County	5,283	163,773
Rogers County	2,266	70,246
Osage and eastern Kay Counties:		
Burbank	29,503	914,593
Osage, outside Burbank	25,999	805,969
Total	55,502	1,720,562
Tulsa and Wagoner Counties:		
Bird Creek, Owasso, etc.	3,832	118,792
Red Fork, Sand Springs, Turkey Mountin, Bruner	2,103	65,195
Broken Arrow and Coweta	1,133	35,123
Bixby, Leonard and Jenks	1,960	60,760
Total	9,028	279,868
Okmulgee and Muskogee Counties:		
Mounds and Beggs	6,815	211,265
Bald Hill and Haskell	3,296	102,176
Morris, Boynton and Cole	2,254	69,874
Okmulgee	2,642	81,902
Tiger Flats and Schulter	1,090	33,790
Total	16,097	499,007
Okmulgee, Okfuskee, Seminole and Pottawatomie Counties:		
Seminole area:		
Seminole City	48,967	1,517,977
Bowlegs	53,675	1,663,925
Little River	82,366	2,553,346
Earlsboro	82,699	2,563,669
Searight	12,747	395,157
Total Seminole	280,454	8,694,074
Pearson-St. Louis-Maud	64,732	2,006,692
Maud	1,300	40,300
Henryetta, Deaner-Lyons, etc.	7,242	224,502
Wewoka	5,720	177,320
Cromwell	9,299	288,269
Papoose-Gilcrease	4,090	126,790
Jarvis-Holm	588	18,228
Weleetka	667	20,677
Wetumka	39	1,209
Yeager	413	12,803
Miscellaneous	1,907	59,117
Total	376,451	11,669,981
Creek County:		
Glen Pool, Sapulpa and Kiefer	6,066	188,046
Cushing-Shamrock	18,584	576,104
Bristow, Kelleyville and Depew	14,912	462,272
Pickett Prairie and North Bristow	1,895	58,745
Eastern Bristow or Slick	7,379	228 749
Total	48,836	1,513,916
Pawnee County:		
Cleveland	2,531	78,461
Keystone	1,795	55,645
Jennings	2,518	78,058
Otoe	399	12,369
Ralston-Masham	190	5,890
Total	7,433	230,423
Payne County:		
Yale, Quay and Ingalls	4,833	149,823
North Cushing	1,710	53,010
Mehan-Ripley	1,333	41,323
Total	7,876	244,156
Lincoln County:		
Stroud	1,071	33,201
Davenport	2,034	63,054
Kendricks	279	8,649
Total	3,384	104,904
Kay, Grant and Noble Counties:		
Blackwell	1,164	36,084
Vernon	642	19,902
Otstot	992	30,752
Deer Creek	923	28,613
Ponca City	866	26,846
Mervine	303	9,393
North Braman	2,892	89,652
South Braman	1,468	45,508
Hubbard	2,786	86,366
Thomas	1,168	36,208
Tonkawa	12,631	391,561
Billings	227	7,037
Miscellaneous	242	7,502
Total	26,304	815,424
Garfield County:		
Garber	7,706	238,886
Logan County:		
Lovell-Marshall	8,936	277,016
Lovell	1,237	38,347
Total	10,173	315,363
Carter County:		
Healdton	13,634	422,654
Hewitt	9,584	297,104
Graham	3,969	123,039
Fox	2,911	90,241
Brock	723	22,413
Sholom Alechem	15,275	473,525
Total	46,096	1,428,976
Stephens and Cotton Counties:		
Loco-Milroy	1,802	55,862
Comanche	2,893	89,683
Duncan	4,761	147,591
Walters	1,029	31,899
Kilgore	244	7,564
Total	10,729	332,599
Jefferson County:		
Hambro-Seeay, etc.	2,371	73,501
Caddo County:		
Cement	1,732	53,692
Garvin County:		
Robberson	2,116	65,596
Grady County:		
Knox	6,165	191,115
Pontotoc County:		
Allen	41	1,271
Beckham County:		
Sayre	46	1,426
Marshall County:		
Madill	400	12,400
Total August	651,474	20,195,694
Total July	606,758	18,809,498
Difference	44,716	1,386,196

KANSAS
Daily Average and Monthly Production in August

	Dy. av. (b.ls.)	Month (bbls.)
Marion County:		
Florence-Urschell	531	16,461

(Continued on Next Page)

Peabody	1,124	34,844
Covert-Sellers	444	13,764
Lost Springs	1,514	46,934
Total	3,613	112,003
Butler County:		
Elbing	2,157	66,867
Potwin	510	15,810
Cameron-Robinson	513	15,903
Wilson-Dunkle	1,713	53,103
Towanda	2,321	71,951
Fox-Bush	936	29,016
Nuttle-Koogler	1,512	46,872
Eldorado	7,351	227,881
Smock	164	5,084
Leon-Weaver	5,915	183,365
North Augusta	940	29,140
South Augusta	1,365	42,315
Sluss	263	8,153
Douglass	121	3,751
Keighly	1,038	32,178
Benton	21	651
Blankenship	743	23,033
Total	27,583	855,073
Greenwood and Wooden Counties:		
Sallyards	1,507	46,717
Teeter-Pixley-Scott	6,418	198,958
Virgil	7,213	223,603
Thrall-Burkett	1,751	54,281
Seeley	6,550	203,050
Polhamus	925	28,675
Miscellaneous	1,576	48,856
Total	25,940	804,140
Cowley County:		
Rainbow Bend	1,173	36,363
Slick	564	17,484
Graham	448	13,888
Rock	175	5,425
Clark	161	4,991
Eastman	497	15,407
Winfield-New Salem	2,060	63,860
Miscellaneous	734	22,754
Total	5,812	180,172
Other Counties:		
Sumner	19,349	599,819
Rice	1,146	35,526
Russell	4,466	138,446
Reno	45	1,395
Rooks	42	1,302
Harvey	37	1,147
Coffey	270	8,370
Chautauqua	2,405	74,555
Elk	1,855	57,505
Wilson	192	5,952
Montgomery	1,502	46,562
Allen	609	18,879
Neosho	501	15,531
Lyon	1,002	31,062
Miami	1,729	53,599
Franklin	429	13,299
Douglas	19	589
Bourbon	18	558
Linn	227	7,037
Anderson	1,706	52,886
Labette	25	775
Chase	26	806
Woodson	970	30,070
Total August	101,518	3,147,058
Total July	102,307	3,171,548
Difference	790	24,490

NORTH TEXAS
Daily Average and Monthly Production in August

	Dly. av. bbls.	Month bbls.
Burkburnett	11,014	341,434
Electra	12,800	396,800
Iowa Park-K-M-A	3,222	99,882
Archer County	20,216	626,696
Clay County	534	16,554
Wilbarger County	34,529	1,070,399
Montague County	8,475	262,725
Young County	8,237	255,347
Baylor County	105	3,255
Cook County	2,519	78,089
Total August	101,651	3,151,181
Total July	96,064	2,977,993
Difference	5,587	173,188

CENTRAL TEXAS
Daily Average and Monthly Production in August

County—	Dly. av. bbls.	Month bbls.
Coleman	3,663	113,553
Comanche	181	5,611
Stephens	7,148	221,588
Eastland	6,232	193,192
Brown	11,309	350,579
Callahan	3,365	104,315
Erath	274	8,494
Throckmorton	818	25,358
Jack	1,392	43,152
Palo Pinto	396	12,276
Shackelford	10,826	335,606
Runnels	50	1,550
Jones	2,756	85,436
Total August	48,410	1,500,710
Total July	49,790	1,543,456
Difference	1,380	42,746

EAST CENTRAL TEXAS
Daily Average and Monthly Production in August

	Dly. av. bbls.	Month bbls.
Boggy Creek	1,260	39,046
Cedar Creek	431	13,360
Currie	567	17,570
Mexia	6,810	211,099
Minerva	814	25,225
Nigger Creek	601	18,622
Powell	10,566	327,550
Richland	517	16,016
Thrall	34	1,068
Wortham	1,734	53,760
Total August	23,324	723,016
Total July	23,020	713,528
Difference	304	9,388

WEST TEXAS
Daily Average and Monthly Production in August

Field and county—	Dly. av. bbls.	Month bbls.
Big Lake, Reagan	17,105	530,251
Chalk, Howard	10,183	315,682
Church & Fields, Crane	33,780	1,047,177
Connell, Ector	8	250
Harding, Howard	17	540
Hendricks, Winkler	182,404	5,654,538
Ira, Scurry	24	756
McCamey-Taylor, Upton	12,060	373,861
McElroy, Crane	13,969	433,043
McMillan, Runnels	68	2,100
Noodle Creek, Jones	2,815	87,251
Powell, Crockett	3,106	96,288
Scarborough, Winkler	....	.....
Settles, Glasscock	....	.....
Stephens, Fisher	968	30,000
Skelly, Reagan	59	1,821
Waddell, Crane	16	465
Westbrook & Iatan, Mitchell	2,823	87,512
Wheat, Loving	113	3,502
Yates, Pecos	69,731	2,161,650
Total August	349,249	10,826,687
Total July	344,477	10,678,801
Difference	4,762	147,886

TEXAS PANHANDLE
Daily Average and Monthly Production in August

County—	Dly. av. bbls.	Month bbls.
Hutchinson	34,016	1,054,496
Carson	6,533	202,523
Gray	20,969	650,039
Moore	704	21,824
Potter	29	899
Wheeler	985	30,535
Total August	63,236	1,960,316
Total July	63,664	1,973,595
Difference	428	13,279

NORTH LOUISIANA
Daily Average and Monthly Production in August

	Dly. av. bbls.	Month bbls.
Caddo, light	9,513	294,903
Caddo, heavy	3,110	96,410
Homer	4,341	134,671
Haynesville	5,952	184,512
Desoto-Red River	3,977	123,287
Elm Grove	569	17,639
Bellevue	765	23,715
Cotton Valley	4,490	139,190
Urania	6,893	213,683
Pleasant Hill	590	18,290
Total August	40,200	1,246,200
Total July	42,143	1,306,433
Difference	1,943	60,233

ARKANSAS
Daily Average and Monthly Production in August

	Dly. av. bbls.	Month bbls.
El Dorado	5,243	163,463
Smackover, light	7,414	229,834
Smackover, heavy	57,109	1,770,379
Stephens	1,023	31,713
Nevada County	1,271	1,271
Lisbon	1,961	60,791
Bradley	100	3,100
Champagnolle	13,326	413,106
Total August	87,477	2,711,787
Total July	90,069	2,792,139
Difference	2,612	80,352

GULF COAST FIELD
Daily Average and Monthly Production in August

Southeast Texas—	Dly. av. bbls.	Month bbls.
Allen Dome	89	2,746
Barbers Hill	596	18,465
Batson	1,386	42,988
Big Creek	3,169	97,922
Blue Ridge	816	25,324
Brenham	150	4,650
Boling	2,079	64,435
Damon	723	22,435
DeWalt	235	7,283
Goose Creek	6,888	213,537
High Island	488	15,122
Hull	10,582	328,040
Humble	3,420	106,027
Markham	391	12,113
Nash Dome	1,371	42,490
North Dayton	1,398	43,340
Orange	3,596	111,466
Orchard	360	11,149
Pierce Junction	10,960	339,753
Raccoon Bend	60	1,846
Saratoga	1,107	34,312
Sour Lake	3,300	102,291
S. Liberty and S. Dayton	3,828	118,682
Spindletop	38,599	1,196,595
West Columbia	8,253	255,868
Total	103,834	3,218,879
South Louisiana—		
Anse La Butte	66	2,035
Bayou Bouillon	431	13,354
Atchafalaya	249	7,728
East Hackberry	561	17,376
Edgerly	1,069	33,139
Evangeline	1,096	33,987
Lockport	3,292	102,045
Loureaville	1	31
Sorrento	12,375	383,621
Starks	848	26,302
Sulphur	3,292	102,050
Sweet Lake	3,856	119,550
Vinton	4,325	134,072
Miscellaneous	6	188
Total August	31,467	975,477
Total Gulf Coast August	135,301	4,194,356
Total Gulf Coast July	141,759	4,394,521
Difference	6,458	190,165

SOUTHWEST TEXAS
Daily Average and Monthly Production in August

	Dly. av. bbls.	Month bbls.
Dale	927	29,051
Kingsville	342	10,612
Luling	13,746	426,107
Lytton Springs	1,267	39,254
Somerset	2,047	63,467
Mirando and Miscellaneous	8,127	251,947
Total August	26,466	820,468
Total July	25,956	804,643
Difference	510	15,825

WYOMING
Daily Average and Monthly Production in August

	Dly. av. bbls.	Month bbls.
Big Muddy	2,748	85,033
Oregon Basin	4,361	135,191

(Continued on Next Page)

GENUINE "TOLEDOS"

TRADE-MARK

NO BETTER TOOLS ARE MADE

It is humanly impossible to build better pipe threading tools than "TOLEDOS." Everything is done to make "TOLEDOS" the superior tools for both cutting and threading pipe.

Made of the best possible materials, constructed scientifically correct to assure the longest wear and most satisfactory service with the least expenditure of effort.

They are the pipe tools that are most satisfactorily serving hundreds of thousands of operators today.

Any size pipe up to 12" may be cut or threaded easily, quickly, anywhere, any time, by one man with "TOLEDO" tools, or connected to "TOLEDO" Power Drives they are instantly converted into swift, highly efficient power machines.

"TOLEDO" NO. 9 WORK BENCH AND VISE
FOR HOLDING 4 1-2" TO 12" PIPE

This is the ideal work bench for handling large pipe. Strong enough for making up fittings as it is practically indestructible. A single downward movement and the Vise lever firmly grips the pipe. The table top is 4 ft. long, 12 in. wide. The Vise jaws are removable; may be returned to the factory to be re-cut when necessary. A work bench that will give years of satisfactory service.

THE TOLEDO PIPE THREADING MACHINE CO. TOLEDO, OHIO
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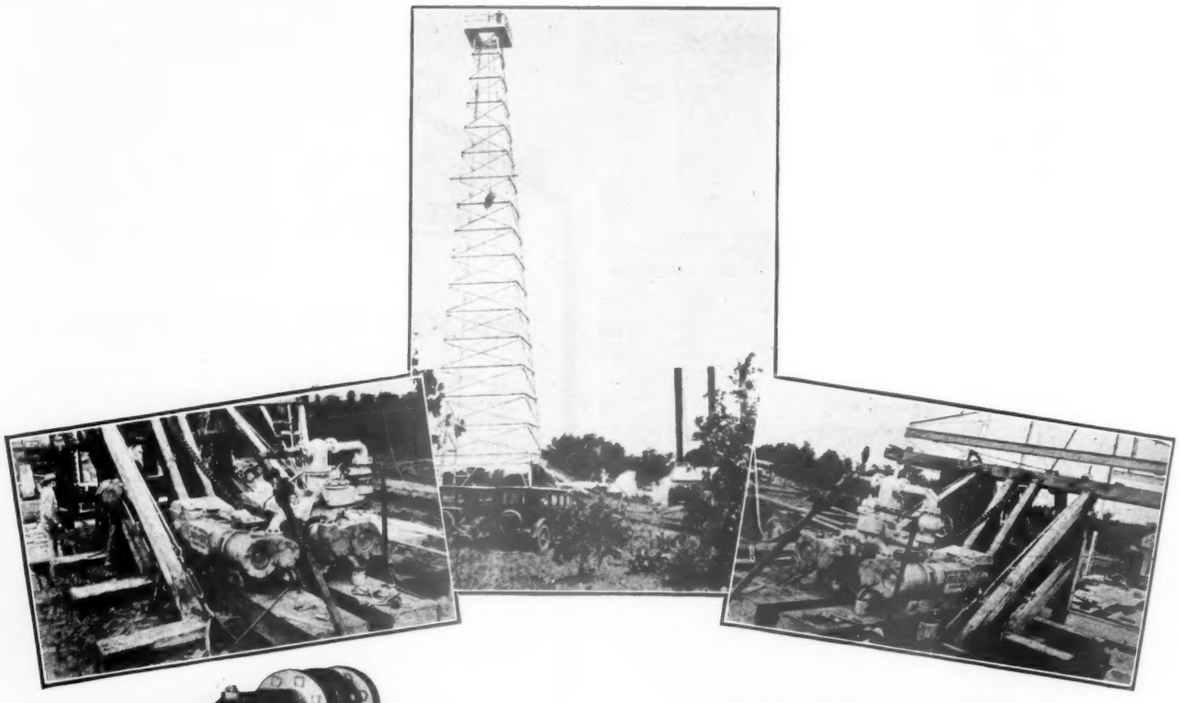
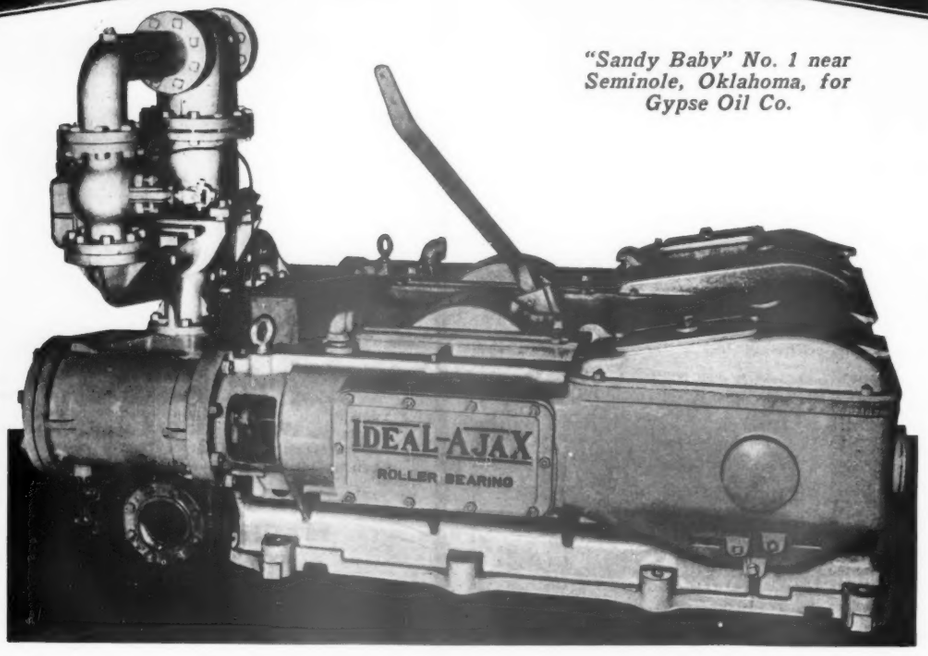
WRITE FOR THE NEW "TOLEDO" CATALOGUE OR—

Ask Your Dealer's Salesman.

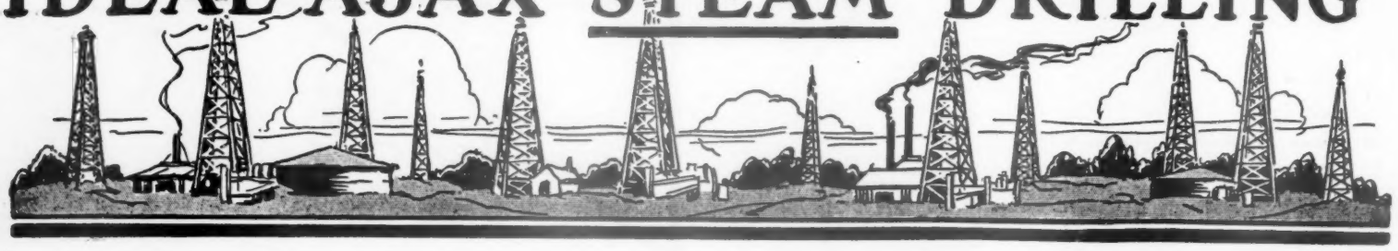
Three New Features for



"Sandy Baby" No. 1 near Seminole, Oklahoma, for Gypse Oil Co.



IDEAL-AJAX STEAM DRILLING



Speed and Efficiency in AJAX Steam Drilling Engines

The 12x12 Twin Ideal-Ajax, totally enclosed, is equipped with

Heavy Timken Roller Bearings

The first drilling engine in the field with antifriction bearings Aug. 5, 1927.

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A better use of power and a saving of vibration and wear.

Steam Separator with Automatic Trap

These features thoroughly proved by test and actual performance mean new saving in time and cost of drilling. Ask the National Supply Co. man for complete information.

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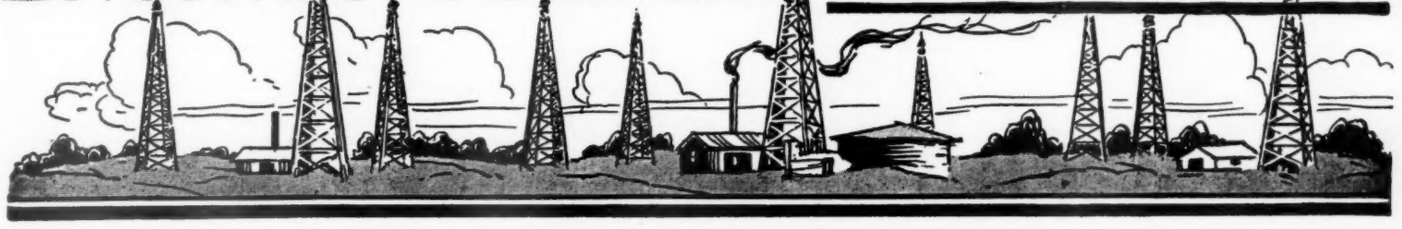
In every oil field

ENGINES DELIVER POWER-PLUS



reliability

Lummus Refining Plants, because of sound engineering and trustworthy construction, are dependable in performance.

Low operating costs,—maximum yields—sustained operation—ease of control, and high quality of products, are inherent advantages of the Lummus system of Low Temperature Refining—

The Walter E. Lummus Co.
173 Milk Street, Boston, Mass.

Byron	28	868
Dutton	27	837
Elk Basin	977	30,287
Ferris	.....	.....
Grass Creek	2,350	72,850
Greybull	12	372
Hamilton	1,220	37,820
LaBarge	623	19,413
Lance Creek	514	15,934
Lost Soldier	4,114	127,534
Osage	511	15,841
Poison Spider	1,525	47,275
Rock Creek	2,775	86,025
Rex Lake	.....	.....
Mule Creek	815	25,265
Lander	427	13,237
Salt Creek	38,499	1,193,469
Simpson Ridge	75	2,325
Total August	61,596	1,909,476
Total July	59,764	1,852,684
Difference	1,832	56,792

MONTANA
Daily Average and Monthly Production in August

	Dly. av. bbls.	Month bbls.
Cat Creek	1,631	50,561
Kevin-Sunburst	8,855	274,505
Lake Basin	114	3,534
Total August	10,600	328,600
Total July	10,246	317,626
Difference	354	10,374

COLORADO
Daily Average and Monthly Production in August

	Dly. av. bbls.	Month bbls.
Craig	1,261	39,091
Fort Collins	2,601	80,631
Florence	1,059	32,829
Iles	1,937	60,047
Tow Creek	544	16,864
Walden	41	1,271
*Rangely	100	3,100
*Boulder	25	775
Total August	7,568	234,608
Total July	8,155	252,805
Difference	497	18,197

*Estimated.

NEW MEXICO
Daily Average and Monthly Production in August

	Dly. av. bbls.	Month bbls.
Artesia	1,063	32,953
Cap Rock (Maljamar)	189	5,859
Hog Back	427	13,237
Rattlesnake	1,056	32,736
Table Mesa	141	4,371
Total August	2,876	89,156
Total July	2,241	69,471
Difference	635	19,685

RECORD OUTPUT IN 1927 MARKETED AT REDUCTION

(Continued from Page 75)

vided about equally between field use, that is, for drilling, pumping, etc., and for industrial uses, including gas burned in making carbon black and gas used by manufacturing establishments. Practically all of the increased consumption of gas for field purposes occurred in Oklahoma and Texas, as a result of an intensive drilling campaign in those States. The major portion of the increased consumption of gas for other industrial purposes occurred in Louisiana, where there was a noticeable increase in use as fuel by refiners, and in Texas, where the consumption by carbon black manufacturers in the Panhandle district and by industrial plants in the Texas Gulf Coast district showed material increases. In general, the price of gas for industrial purposes has shown little change over the past 10 years, whereas the price of gas for domestic consumption has increased steadily. This is due mainly to the fact that the fields near the centers of population have declined in output, whereas all the prolific gas fields of recent years have been found in comparatively isolated localities.

MAGNETOMETER'S CHIEF USE IN PROSPECTING

(Continued from Page 33)

are actually located and designated on the maps.

Base Stations

Where the boundaries of the complete area in which the company is interested are known, the party chief should make a preliminary inspection of the roads available and then choose a series of easily accessible points well placed over the entire area and designate these points as base stations.

The relative magnetic intensities of these base stations should then be carefully and accurately determined by checking and rechecking with all instruments, for upon these points will depend the securing of satisfactory results.

It is of utmost importance that these base stations be located at points that are far removed from pipe lines, well casings, windmills, water tanks, or any other magnetic materials.

Procedure

The operator sets up his magnetometer at one of the base stations and by means of the auxiliary magnet adjusts the instruments so that the deflection will be about zero. The auxiliary maget is then rigidly secured in position as outlined under adjustments, and left in this position throughout the work in that area, unless the instrument deflection should go off scale at some intermediate point, in which case a second adjustment of the auxiliary magnet becomes necessary.

Having made this adjustment on a base station, the operator records the readings for north end of instrument in east (N-E) and N-W, also temperature and time. He then takes the magnetometer to the next station on his assignment, sets it up and reads and records the four factors as before. This procedure is repeated at every station.

At intervals of every two or three hours, the operator should return to one of the base stations for a reading. The object of this being to make corrections for the diurnal variation, discrepancies in the temperature coefficients and other failures to close. (See corrections.) The last reading for the day should always be taken at a base station.

Corrections

Under this heading will be taken up the following corrections. Correction for the diaurnal range, correction for latitude and longitude, correlation of bases.

Under the heading of diurnal range it was briefly outlined the effects produced on a magnetic survey by the daily variation. It was pointed out that the value of this quantity could be obtained on an instrument maintained at the base, but that this was not desirable.

A very simple and quite accurate method to take account of this correction is to have each operator return every two or three hours to the original base or to some other well established base for a reading. If the operator returns to the original base, and after setting up the magnetometer and reading he finds that the value of the difference in intensity instead of being zero, is for example —12 gamma, then it is reasonable to assume that this failure to check back is due to the diurnal range and inaccuracies in temperature coefficient.

Suppose that three hours after this reading, the operator again returns to the base station and this time finds that he fails to close by —8 gamma. By plotting these three readings, i.e., zero at starting time, —12 gamma at three hours later and —8 gamma at six hours later, it is possible to obtain an approximate diurnal correction curve. Since the time is plotted on one axis and the time for each reading or station observed during the day has been recorded, it is possible to determine very closely the diurnal correction for each station by means of a curve drawn through the values zero, —12 and —8. The correction that must be applied is of course opposite in sign to the value of the reading taken from this curve.

It is obvious that if greater accuracy is desired then the operator should return more frequently to one of the base stations.

For a large number of observations that came under the supervision of the writer, it was found that this method gave excellent checks. It also reduces the error involved in using temperature coefficients of uncertain accuracy.

Correction for Latitude and Longitude

Under the heading of the Earth's Magnetic Field it was shown that the farther one travels from the North Pole the weaker becomes the magnetic field. Assuming the earth to be a homogeneous material and magnetized, it is possible to compute mathematically the normal regional correction to take care of this weakening of the field. This regional correction when deducted from the ob-

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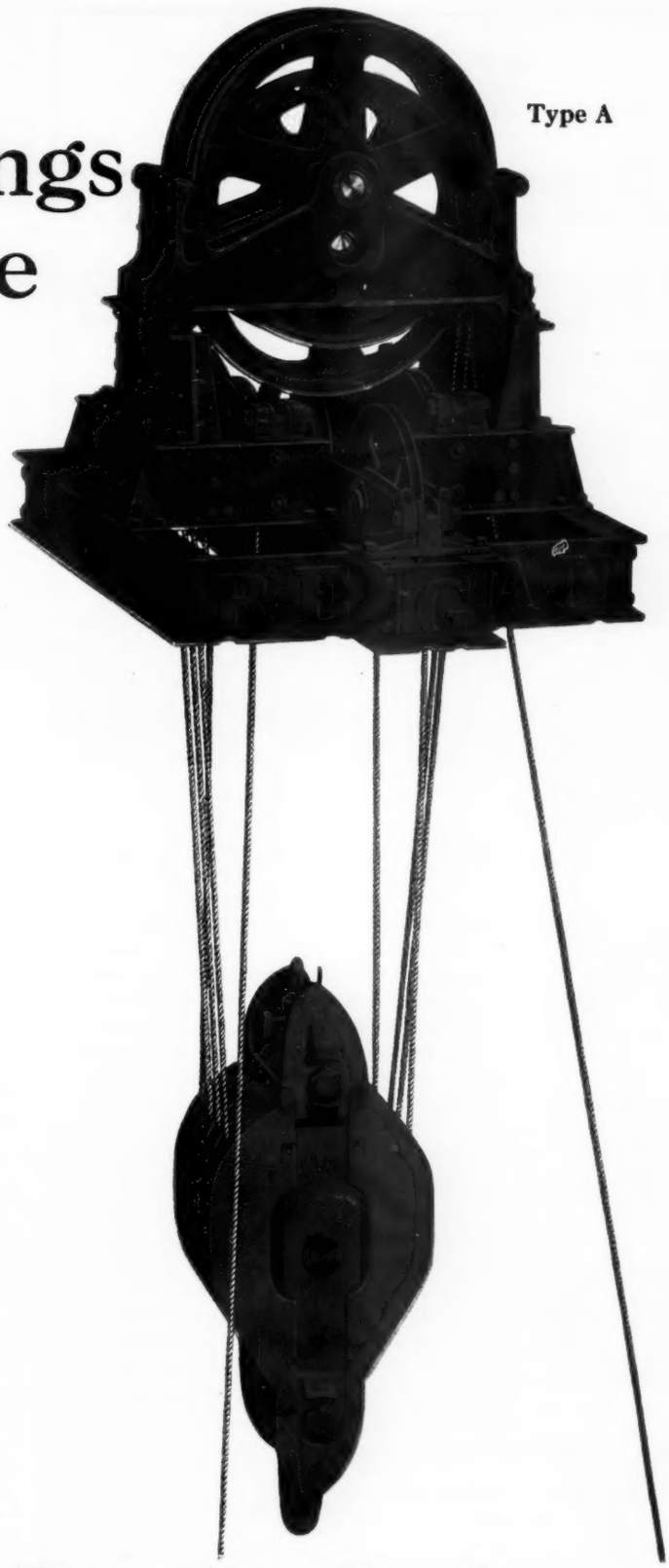


Type A

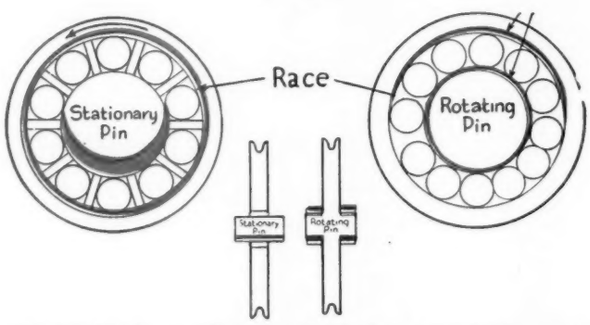
The bearing principle in Regan Crown & Traveling Blocks is patented. No other manufacturer can use the staggered integral pin principle.

Study the mechanical perfection of Regan bearings. Compare it with the function of stationary pin types.

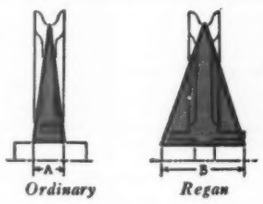
Rotating Pin Permits Distributed Load

Stationary Pin Type Blocks are subject to concentrated wear.

Regan Pins rotate and therefore the wear is widely distributed.



The load being on the upper half of the bearing instead of on the lower half makes it unnecessary to use a separator as the rollers of the bearings automatically space, being fed, one by one, on the upward movement from the lower half of the bearing. In *stationary* pin Blocks the maximum wear is concentrated on only half of the circumference of the pin, the smallest member of the bearing, while the minimum wear occurs over the entire circumference of the *race*. This brings about rapid destruction of the pin. Such an inherent defect is not present in the Regan Block. The sheave pin rotates. The wear is evenly distributed over the entire circumference of the pin, which makes it practically equal to ½ of the larger circumference of the race.



Ordinary *Regan*

The Regan principle permits a bearing to be placed on each side of the sheave, resulting in a smaller bearing with a wide base which practically eliminates destruction usually caused by thrust loads at the periphery of the sheave.

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served readings leaves the magnetic anomalies. In Oklahoma the regional correction is approximately 12 gamma per mile north or south and 3 gamma per mile east or west. If a station is south and west from the base station then the regional correction will be positive; if the station is north and east from the base station then the correction will be negative.

Correlation of Bases

The correction for change in bases is carried out similar to the correction for a series of levels taken with reference to different bench marks.

Sample Data Sheet

The field work and computations are speeded up if a standard type of data sheet is adopted. Lefax forms can be printed at a small cost and then all records are uniform. The headings for the columns of a sample data sheet are shown below. On the reverse side the data sheets should have printed a plaque of a township divided into sections so that the operator can spot the stations on it.

Cost of Doing Magnetometer Work

The cost of doing magnetometer work will depend upon the area where the work is to be done. For instance, in West Texas the cost per station will be more than in some parts of Oklahoma. This added cost is due to the lack of roads and the necessity of doing surveying. The time of the year will also influence the expense in that the work is delayed by impassable roads or extreme cold. In general, the figures submitted here are quite representative and will give an idea as to the cost per acre for magnetometer work.

COST SHEET

Salaries:	
Chief of magnetometer work, per month	$400.00
Three operators at $125	375.00
Personal expenses four men at $125 a month	500.00
Car expenses, four cars at $100 a month	400.00

Operator .....
Date .....
Instrument No. ..... K "a"
Base stations occupied .....
Position and size of auxiliary magnet.....

Stat.	Time	Temp.	ΔT	aΔT	Def. N-E	Def. N-W	Av. Def.	ΔX	KΔX	dz'	C	dz"	Reg.	dz	Net dz

Designation of Stations

It is very desirable that some sort of a uniform method for designating the stations should be adopted and used throughout the survey. The designation should be such that any stations can be quickly located on the final map by merely giving its designation.

Cautions

As part of a new operator's training, he should set up his magnetometer close to a well full of casing and take a series of observations as he moves the instrument away from the vicinity of the well. In this way he will observe for himself how far it is necessary to move away from a well in order that his readings will not be affected.

He should try a similar experiment in connections with an iron fence, a pipe line and his car.

Also in order that the party chief shall have a daily check on the instruments, each operator should be required to record three sets of successive readings for each observation at the base stations whenever he reads at these stations. As pointed out elsewhere, this is one of the best checks for determining a damaged knife edge.

Explanation of the Data Sheet

The first, second and third columns need no explanation. The fourth column marked Δ T represents the change in temperature that has occurred between the base reading and the particular station reading. To obtain this it is only necessary to subtract the base temperature reading from the station temperature reading. The next column is the product of the temperature coefficient and the change in temperature. Def. N-E and Def. N-W have already been explained. Av. Def. represents the average of the two readings N-E and NW. Δ X is the difference in the average deflection at any station and the average deflection at the base. K Δ X is the product of the scale constant and the difference in deflections just mentioned. Dz' represents the sum of the two values "a" T and K X. The next column is headed "c". This is the correction that is applied to take into account the diurnal range and the method of obtaining its value for each station was discussed under "Corrections." Dz" represents the sum of Dz' and the correction "c". The column marked "Reg." takes care of the correction for latitude and longitude as has been explained under "Corrections." The Value DZ represents the sum of Dz" and regional correction. The final column is to take care of the correlation of bases whenever more than one base has been used as a reference. This column gives the final value of the magnetic intensity relative to one base station to which all the work is referred.

Repair of instruments	25.00
Total expense per month	$1,700.00
Total expense per year	$20,400.00
Cost of magnetometers, 3 at $870..	$2,610.00
Cost of cars, 4 at $630	2,520.00
Calibrating equipment	75.00
Total equipment and operating cost per year	$25,605.00
Resale value of equipment	$2,300.00
Net total cost	$23,305.00
Stations per day	75
Stations per year, allowing for loss of time due to bad weather and other delays, 275 times 75	20,625
At one station per section corner gives 573 townships.	
Cost per township approximately	$40
Cost per acre, approximately one-fifth cent.	

Interpretation of Results

When magnetometer work was first applied to the oil industry it was hardly to be believed that the results obtained would require any great amount of highly technical interpretation. As more and more work was done with these instruments it became apparent that the relation between a magnetometer contour map and a geological structure map was not a simple one. It was found in going over some known structures that the two pictures checked very closely, in other instances the magnetometer gave an entirely different presentation. The question then that must be answered is how to tell what the magnetometer shows, in other words how to interpret the magnetometer picture in terms of geological formations.

One of the most important details to be considered along the line of interpretation is magnetic susceptibility. It is important from the standpoint of locating granite uplifts that the relative susceptibilities of the granite and the adjacent deposits be quite different otherwise no anomalies will show up.

Considerable work has already been done on the measuring of susceptibilities, but for the purpose of interpretation it is desirable that the samples tested be taken from the area under investigation. Where wells are already in the process of being drilled then samples of rock taken from the different strata should be measured for susceptibility and their original depth and location accurately recorded.

A simple apparatus for measuring the susceptibilities of different samples is shown in Figure 10. It consists of a sensitive balance, a solenoid, and a means of controlling the field strength of this solenoid. The sample to be tested is pulverized and sifted through a fine mesh. The powder is then poured into a long slender tube about one-half inch in diameter and weighed by means of the balance. A known value of current is then

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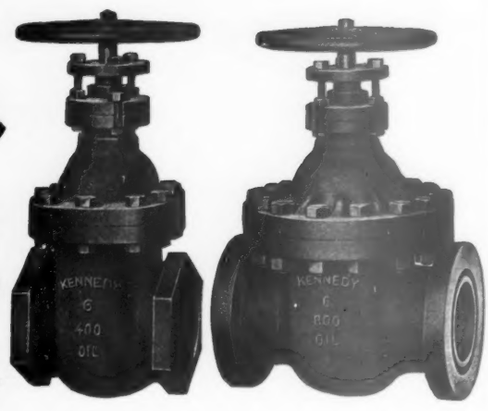

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passed through the solenoid and the scale is rebalanced. The difference in weights obtained with and without the electric field together with the current are recorded. From this increase in weight and the flux density in the gap it is possible to compute the value of the susceptibility. If the specific susceptibility is desired then it is necessary to also determine the ratio of the density of the sample in powder form to its density in the solid form.

The apparatus and method described above are crude and could be rendered more accurate by the addition of certain refinements. It does, however, serve the purpose of giving a means of determining approximate susceptibilities.

The results of a large number of measurements on different rocks have been published by Dr. A. H. Cox, Prof. A. W. Rucker and Mr. White, and Prof. Ernest Wilson.

The report by Doctor Cox covers the relative magnetic susceptibilities of rocks classified into two groups, (1) the sedimentary rocks and (2) the igneous rocks.

Under the first group he discusses (a) nonferruginous and slightly ferruginous rocks, (b) the Mesozoic iron ores, (c) the clay-ironstones of the coal measures.

Under the second group Doctor Cox discusses (d) rocks of low susceptibility, (e) the Mount Sorrel granite and associated rocks, (f) dolerites intrusive into coal measures

In general the results of a large number of susceptibility measurements show that the value of the susceptibility is apparently dependent only on the chemical composition and is not influenced by the texture of the deposits. To this extent "the susceptibility is independent of the geological horizon at which the ore occurs."

Professor Wilson gives the following values of susceptibility for some samples tested by him:

Normal granite, gray variety	65-130	$\times 10^{-5}$
Normal granite, pink	45	$\times 10^{-5}$
Basic marginal granite	22	$\times 10^{-5}$
Hornblende diorite	12	$\times 10^{-5}$
Ophitic analcite dolerite	391	$\times 10^{-5}$
Ophitic dolerite	9	$\times 10^{-5}$
Basaltic dolerite	454	$\times 10^{-5}$
Average of 45 dolerites and basalts	255	$\times 10^{-5}$

It is apparent that the susceptibility is dependent primarily upon the quantity of magnetite present and for this reason is independent of the acid or basic character of the rock.

Effect of Polarization

Thus far there has been no mention made of the possibility of the structure being polarized, yet from an inspection of a large amount of magnetometer results, it would seem that this particular fact is of primary importance in the interpretation of the magnetic surveys.

It is a well-known fact that if a piece of iron be subjected to the influence of a strong magnetic field for a period of time, and then removed from the field, the iron will show evidence of permanent magnetism. In a similar way it is reasonable to suppose that some of the igneous rocks having been under the influence of the earth's magnetic field for a long period of time, will have become permanently magnetized. That something of this nature has actually occurred is given strong support by the permanent magnetism exhibited by some samples of rocks examined.

As a simple illustration of the effects that such residual magnetism may produce, suppose that we consider a permanent magnet placed in a uniform magnetic field as shown in Figure 11. If the south pole of the magnet is vertically upwards and the direction of the uniform field is downwards, then it is seen that the two fields will add directly over the end of the magnet resulting in an increase in the field strength.

If the north pole of the magnet is vertically upwards, then the two fields will subtract from one another, resulting in a magnetic low directly over the end of the magnet. Suppose the magnet is assumed in a horizontal position. Then at one end, the south pole, the two fields will add giving a magnetic high, while at the other end, the north pole, the two fields will subtract giving a magnetic low. In between the two ends there will be a distortion from the uniform condition.

From these simple illustrations it can be seen that because of polarization (when a body becomes magnetized it exhibits definite north and south poles, this is referred to as polarization), it is possible to have either a magnetic high or a magnetic low over a structural high, depending upon whether the structure is polarized and which magnetic pole of the structure is uppermost.

In practice the polarized body does not as a rule occur in a vertical or horizontal position, but may be inclined at some angle, resulting in a magnetic high and an adjacent low. In practice also the shape of the structure is as a rule unsymmetrical and irregular, but by taking into consideration both the high and the low of the magnetometer picture it may be possible to roughly outline the axes of the geological structure.

Earth Currents

In the above discussion on polarization nothing was mentioned about the effects of local earth currents. One source of these earth currents is the battery action that takes place because of chemical reactions in the earth Also whenever an electric current passes through a conductor there is an electromagnetic effect produced, which shows up in the establishing of a magnetic field about the conductor. This magnetic field has the same effect on a magnetometer that a permanent magnet would produce, and like the polarized body it also causes a distortion of the earth's normal magnetic field.

The effects of these earth currents must also be considered in the final interpretation of the magnetometer work.

Possible Methods of Interpretation

There are three possible methods by which the work of interpretation can be carried on. These are (a) by mathematical investigation, (b) by empirical means, (c) experimentally.

The mathematical method of attack is excellent for evaluating only the very simplest of cases. The equations become complicated and cumbersome just as soon as any slight deviation from the simplest case is taken up. It is possible to evaluate, mathematically such cases as a bar magnet p'aced in a uniform field, a magnetized sphere, and a magnetized ellipsoid and perhaps one or two other simple geometrical figures. However, as soon as the axis of polarization is changed a slight amount the whole problem has to be reworked.

The empirical method has a wide field of application and is available for use as soon as any considerable amount of known structures have been mapped with the magnetometer. One disadvantage of this method is the problem of determining the effect that has been produced by the presence of the well casings. In other words the question arises whether the magnetometer would have presented the same picture over a given field if the work had been done before the field was developed. In connection with this it would be advisable to make a very careful magnetometer survey over an area where it is proposed to drill and then to compare this picture with one made after one of the wells has been completed.

The experimental or model method would appear to be the most logical means of carrying on work of interpretation. Once a suitable method is worked out it would be possible to study all kinds of structures under all sorts of conditions. Work of this kind would progress rapidly and give direct results at a cost that should be very reasonable

Conclusions

Because of the nature of the results obtained in many instances it is advisable to do magnetometer work for reconnaissance.

It is apparent that in as much as both magnetic highs and magnetic lows are important and necessary in defining some structures, any program for magnetometer work should be planned with the view of covering areas in units of several townships at a time, as otherwise it would be, in most cases, impossible to interpret the results.

The program should be clearly in mind and carried to completion without in-

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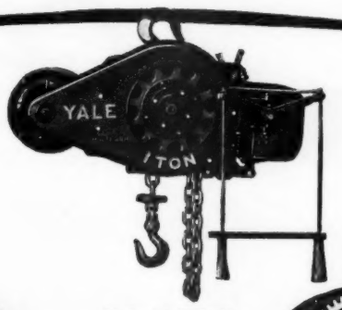

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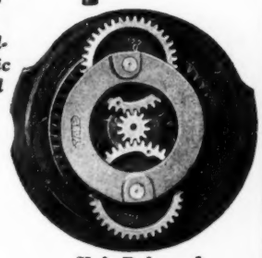

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terruption, otherwise the cost of moving from one area to another and back again with the attending loss in time, will add materially to the cost of doing the work.

If large areas are surveyed in the form of a blanket magnetometer survey, it is possible to obtain a picture of the regional structural features, which, coupled with the known geologic features, will evaluate much territory as being unfavorable or worthy of additional study.

The magnetometer can also be used to do detail work where the purpose of such detail is to complete a picture, the major portion of which is already known.

In certain areas it would be a fallacy to drill or even lease acreage on the strength of just a magnetometer high or low, but by taking into consideration all factors such as surface geology, subsurface geology and regional geology, the additional information given by a magnetometer may be of great assistance to the geologist in making his decision.

An ideal application of the magnetometer survey is to determine areas favorable for coredrilling. The cost of coredrilling one test is a large item in comparison to the cost of getting magnetometer information. If then the axes of a structure are first roughly determined by the magnetometer as explained elsewhere, and then checked with a few well-placed coredrill holes the saving in the expense of a major portion of the coredrill work will more than repay the cost of the magnetometer survey.

Pipe and Tube Mills Operating in General About 70 Per Cent

By B. E. V. Luty

PITTSBURG, Pa., Oct. 1.—The tubular goods market has been rather quiet in the last week. There is no definite decrease in the general demand, but there certainly has been no increase lately, and the week lacked any fresh news as to line pipe orders. There remain various projects and some of them may come to a head for spring laying, in which case orders might be placed late in the year, as that is the time when the mills usually make the most favorable prices, as they want an outlet for their steel.

Demand for standard or merchant pipe has been very steady all this year, showing little variation from time to time. It is estimated that at no time has the demand been as much as 5 per cent below that of last year, but it is only occasionally that it has run ahead, hence there is some doubt whether the year's total in merchant pipe will equal that of last year, when there was about 9 per cent decrease from 1926. Building operations have been decreasing of late, and that is an important factor.

In casing and other well material there has been a decidedly steady demand this year at rather a low rate compared with the average of the past two years. In the old days demand for oil country goods used to taper off sharply around October 1, but on account of the southern and California fields being so prominent there is much less seasonal fluctuation than formerly, and pipe mills expect a continuance of something like the recent demand right through the winter.

All told, there has been a large amount of line pipe bought in a trifle over three months, beginning with two large orders late in June. This has greatly helped pipe and tube mill operations. Some of this line pipe was for very rapid delivery, taxing the capacity of some pipe furnaces, while in other cases the deliveries are quite extended, and it is impossible to estimate closely how long the business will last, whether the playing out of such orders, provided there is no fresh buying in the near future, will materially effect the rate of pipe and tube mill operation.

A fair estimate of the operating rate of the pipe and tube mills in general is about 70 per cent.

The finished steel markets considered as a whole have been somewhat quieter in the last week. This is probably a reaction from the extra buying that has been induced by various price advances or attempts at price advances, many of these being dated to become effective September 10, on fresh orders, while the advanced prices had been named for fourth quarter and the same date had been set for completion of specifying on third quarter contracts.

Some of the mills have privately expressed doubts whether they will be able to maintain their recent rate of operation beyond the middle of this month. The general rate of steel production in September was close to 85 per cent of capacity, against 82 per cent officially reported for August, 81 per cent for July and 76 per cent for June, thus far the low month of the year.

Slightly advanced prices are in force on bars, shapes, plates, sheets and cold rolled strips. Hot rolled strips, wire products and various other lines are unchanged.

Valley furnaces continue to quote their recently advanced asking prices on pig iron, but there have been no sales of such size as to test the market.

MEXICAN SHIPMENTS DECLINED IN AUGUST

TAMPICO, Mexico, Sept. 29. — (By Trens Agency)—A revolution took place in petroleum exports from Mexico during the month of August, according to unofficial figures now available. This gave a decrease in export of more than 900,000 bbls. compared with the previous month.

Nine of the leading exporting companies showed a decrease in their shipments. Five companies, generally considered as relatively small exporters, showed an increase.

The greatest sensation of the month was the decrease of the Huasteca Petroleum Co. by half of its usual exports. The Transcontinental entered a new subsidiary in the export field, the Rayon, but even including the petroleum exported by this company, still stood below its usual total.

Companies showing an increase, excepting the Rayon, were the Mexican Gulf, the Mexican Atlas, the Panuco-Boston and the Penn-Mex, which had made no shipments in July.

The Huasteca Petroleum Co. handled in August 1,025,055.81 bbls. of which 638,037.10 was export, 369,505.30 Mexican delivery and 17,513.41 used for company operations.

El Aguila, a Dutch-Shell subsidiary, exported 608,238 bbls., a decrease of 138,356 bbls. over July. La Corona, a subsidiary of the Dutch-Shell also, shipped 49,004.81 bbls., a decrease of 130,046.48 bbls. over July.

Comparative figures on exports for August and July, in barrels, are as follows:

Huasteca	638,037.10	1,243,212.96
Aguila	608,238.00	746,594.00
Transcontinental	484,221.71	675,248.00
Mexican Gulf	183,759.02	134,187.04
Rayon (new)	149,533.81	.....
Mexican Sinclair	113,758.35	153,615.42
Panuco-Boston	71,028.17	.....
Empire	68,446.74	128,960.64
Penn Mex	58,800.00	.....
Corona	49,004.81	179,051.29
Mexican Atlas	46,118.00	35,255.91
Pierce	5,111.49	50,963.27
Mex. oil products	4,745.56	15,501.43
Texas Company	.....	63,930.03
Total	2,480,802.76	3,426,519.99

OWEN MANNING DIES

HOUSTON, Tex., Sept. 29.—Owen Manning, pioneer pipeliner and lately employed by the Houston Pipe Line Co. at Wharton, Tex., died suddenly while waiting for a train at Houston September 24. Mr. Manning had been employed at various times by virtually all the older and larger companies. Mr. Manning was born November 10, 1859, at Monticello, Sullivan County, New York, and started pipelining in Olean, N. Y., in 1880 with the Warren Heat & Light Co. Since, he has worked in fields of New York, Pennsylvania, Wyoming and Texas. He is survived by two brothers, John Manning of New York, and Peter J. Manning, foreman of the Houston Pipe Line Co., Houston.

GULF COAST FIELDS

(Continued from Page 51)

was confined chiefly to routine drilling, but several tests have reached sands which probably will be tested the coming week. Yount Lee Oil Co.'s No. 70 Gladys City cored sand at 3,287 feet. No. 71 Gladys City is in sand and shale at 3,220 feet. No. 72 Gladys City is in gumbo and lime at 2,170 feet. No. 49 Gladys City, which tested salt water at 4,098 feet, is trying to mill out to deepen. On McFaddin lease, this company's No. 20 is drilling sand and shale at 3,549 feet. No. 25 is trying to clean hole to deepen, having tested salt water at 3,883 feet. No. 69 is in shale and lime at 4,861 feet. No. 81 is drilling sand and shale at 2,720 feet and No. 82 the same formation at 2,554 feet. No. 83 McFaddin tis in gumbo at 2,542 feet. Yount Lee Oil Co.'s No. 5 fee is preparing to deepen and No. 6 fee, another old well being deepened, is drilling at 992 feet with casing set at that depth. No. 2 Davis had a small blowout at 2,699 feet, but has killed this.

Unity Petroleum Co.'s No. 97 McFaddin was put on the pump for 30 bbls., but quit producing and now screen is being pulled to deepen. Production was from a shallow sand at 900 feet. This company also has made location for No. 98 McFaddin. Stella Oil Co. has started a new test, No. 26 Hogg-Swain, and late in the week was drilling rock at 775 feet. L. A. Painter's No. 1 Rush is drilling below 4,975 feet. Gulf Production Co.'s No. 224 Gladys, a shallow test, cored sand at 900 feet.

The Texas Company's No. 1 Gladys City, completed several weeks ago as a small producer, extending production to the northwest, has been worked over and is being put on the pump.

Blue Ridge—Fort Bend County

South Texas Production Co.'s No. 1 Davison, on the east flank of the dome and a former well deepened to 3,850 feet, failed to flow at the lower sand and is being rigged up to pump. This company's No. 2 Gabe Lee also has picked up sand at a total depth of 3,692 feet and has set 6⅝-inch casing at 3,650 feet to test. Gulf Production Co.'s No. 15 Blakely on the same flank is drilling hard sand and boulders at 1,322 feet. Its No. 12 Lusher, an old well being deepened, is drilling sandy shale at 3,929 feet.

On the north and northwest sides, Bowden Oil Co.'s No. 4 Overly is drilling gumbo below 1,475 feet. Navarro Oil Co.'s No. 1-A Robinson, an old well, is drilling deeper at 3,812 feet. H. G. Nelm's No. 3 Blakely is drilling gumbo at 2,221 feet. E. F. Simms' No. 1 Scott is drilling shale at 2,738 feet. Telshaw and associates' No. 1 Blakely is in gumbo below 1,808 feet. Watts Oil Co.'s No. 8 Blakely is drilling gumbo at 1,901 feet.

Humphreys Corp.'s No. 4 West-Schenck, south flank, is drilling gumbo at 1,189 feet.

Big Creek—Fort Bend County

Navarro Oil Co.'s No. 2 Hausler, as the week closed, was being watched closely, it having strainer set to test oil sand at total depth of 3,577 feet. Gulf Production Co.'s No. 48 Davis on the adjoining tract was drilling gumbo at 3,041 feet. The latter's No. 49 Davis was in gumbo and boulders at 291 feet.

Nash Dome—Fort Bend and Brazoria

Rycade Oil Corp.'s No. 6 Julius Meier has been delayed all week with a fishing job with the bottom of the hole at 5,675 feet. Rycade's No. 13 Wisdom, an old well, is deepening in shale and lime at 3,301 feet. No. 24 Wisdom, which drilled into salt at 5,182 feet and was to have been abandoned, has sidetracked and in new hole is drilling at 3,892 feet. This well is a west extension test. No. 14 Nash is drilling sand at 5,393 feet, but is not showing oil. Humble Oil & Refining Co. and Rycade Oil Corp.'s No. 1 Wisdom is being rigged up.

Hardin County Domes

Gulf Production Co.'s No. 19 Knight fee, Batson, is drilling gumbo and shale at 302 feet. Paraffine Oil Co.'s No. 77 Paraffine late in the week was testing sand at 824 feet. Acorn Oil Co. is getting ready to drill No. 67 Paraffine, Knight Survey.

At Sour Lake, The Texas Company's No. 277 fee was bailed in Saturday as a small gasser in sandy shale at 2,310 feet. The gas will be used as fuel.

Rio Bravo Oil Co.'s No. 85 Jordit, Saratoga, failed to make a well at 1,035 feet and is drilling deeper in sticky shale at 1,105 feet. E. W. Skinner's No. 1 Sessler is drilling deeper at 1,985 feet. Weldon Oil Co. has started a new test in its No. 1 B.B.B.&C., which is drilling below 764 feet.

Pierce Junction—Harris County

South Texas Production Co.'s No. 5 Howe tested salt water at 5,300 feet, and as soon as strainer can be pulled it will be deepened. Gulf Production Co.'s No. 6 Cain also failed to make a well at 4,615 feet and screen is being pulled to deepen. The latter's No. 26 Taylor is drilling gumbo and lime at 986 feet.

On the west flank, Rio Bravo Oil Co.'s No. 9 fee has been held up at 3,676 feet with a fishing job. No. 9-A Settegast is drilling shale and gumbo at 4,315 feet. No. 7-B Settegast is to be deepened.

Shaw and associates' No. 3 Fitzsimmons, north side, is drilling rock at 3,246 feet. Joe Bashara's No. 1 Higgins is drilling below 4,031 feet. Anderson & Plummer's No. 4 Whitehead is drilling at 3,234 feet. Moody Corp.'s No. 1 Whitehead is sidetracking at 4,025 feet.

Goose Creek—Harris County

Gulf Production Co.'s No. 13 Briggs is being rigged up to pump at 3,538 feet. Humble Oil & Refining Co.'s No. 3 Jones Stateland, an old well, is drilling at 3,283 feet. Jim McMurray's No. 3 Grace Addey is drilling at 2,274 feet. Humble Oil & Refining Co.'s wildcat, No. 74 Simms-Smith, northeast of the field, is drilling gumbo and boulders at 2,275 feet.

Hull—Liberty County

Big Six Oil Co. is rigging up to pump its No. 2 Stovall in a shallow sand. Empire Gas & Fuel Co. has a rig up to deepen its No. 17 Barrgrover. Gulf Production Co.'s No. 16 Phoenix is drilling sand at 2,927. Its No. 53 Phoenix lost the core barrel in hard sand at 4,373 feet, necessitating a fishing job. No. 24 Morris-Phillips is in sand at 2,410 feet. Humble Oil & Refining Co.'s No. 8 Guedry still is being work on after sanding up and now is perforating pipe. Republic Production Co.'s No. 40 Dolbear is sidetracking at 1,725 feet. The latter also has a rig up to deepen No. 85 Dolbear. The Texas Company's No. 4 Hannah fee is in sandy shale showing oil at a total depth of 3,321 feet and has set 6⅝-inch casing.

Liberty—Liberty County

Humble Oil & Refining Co. is spudding in on its No. 9 Welder on the west flank, or South Dayton side, of the dome. Sun Oil Co.'s No. 8 Mitchell, north edge of production, was coring oil sand at 3,464 feet as the week closed after drilling plug at 3,350 feet. Yount Lee Oil Co.'s No. 10 Mitchell is drilling gumbo at 2,310 feet.

Orange—Orange County

Brownie-Babbett Oil Co.'s No. 2 McLean is milling out to deepen. Humble Oil & Refining Co. has set strainer to make another test in an oil-showing formation around 2,905 feet. Orange Petroleum Co.'s No. 2 Berwick, an old well, is drilling around 2,900 feet. Rycade Oil Corp.'s No. 2-C Cow Bayou is cleaning out to deepen. Sun Oil Co.'s No. 5 Gunstream also is still trying to clean the hole, having drill stem stuck at 5,422 feet. The latter's No. 6 Brown is coring shale at 4,886 feet.

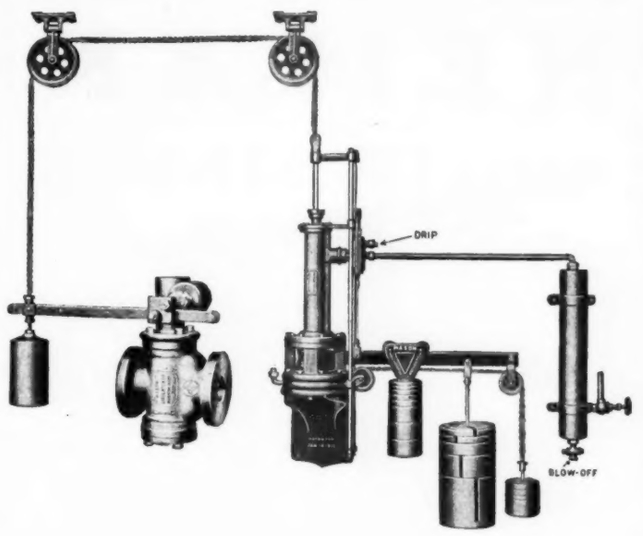
High Island—Galveston County

Gulf Production Co.'s No. 1 Spencer is in sand and shale at 3,010 feet, but at present is fishing. No° 7 Smith is drilling in sidetracked hole at 2,768 feet in hard, sandy shale and lime, after going to a total depth of 3,145 feet. Marrs McLean is pulling liner in its No. 11 Cade, a former producer to be deepened. No. 14 Cade is drilling gyp at 3,836 feet.

South Louisiana

Jennings—Acadia Parish

Gulf Refining Co.'s No. 2 Leckelt is drilling sand at 3,027 feet. E. F. Simms' No. 1 Cockrell (west flank deep sand discovery well) is deepening in sand rock



For close regulation of gas-fired boilers

The Mason No. 130 Regulator, operated by oil or water, and used in combination with a Mason Style E rotary balanced valve, gives accurate, positive control of gas or oil fuel under the most severe service conditions.

In the more permanent boiler plants throughout the various branches of the oil industry, this combination has proved indispensable.

There is a Mason Regulator for every field or refinery need. Write for a copy of Catalog No. 62 giving a complete description and prices.

Mason Regulators Include:

Casing Head Gas Regulators for back pressure relief or for regulating the amount of vacuum in a vacuum system.

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Neilan Back Pressure and Vacuum Gas Regulator No. 50.

Designed for controlling the flow of gas and gasoline vapors in gas lines from casing heads, run-down tanks and traps from flowing or pumping wells.

Where the line from an oil or gas well is connected to a compressor, this Neilan Regulator will prevent the pressure in the well from being drawn down below the desired point.

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In a system of gathering lines, a definite pressure or vacuum can be maintained on each well individually by installing one of these regulators on the line from each well.

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Construction eliminates practically all friction and it can be fully relied upon for accuracy and sensitiveness. Has no stuffing boxes. Valve absolutely will not stick or bind. Each regulator fitted with diaphragm of proper size for working conditions specified. Bulletin No. 45 gives complete details of construction and operation.

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at 4,114 feet. No. 1 Syndicate-Clemont is in sand showing oil at 3,867 feet. No. 2 Syndicate-Clemont is standing rigged up. No. 1 Jennings has been spudded in. No. 2 Cockrell is standing as a derrick, as is Abshire-Bolyard Oil Co.'s No. 5 fee. These tests are all on the west side of the dome, and on the opposite side The Texas Company's No. 5-B Latrielle is testing a formation at a total depth of 1,987 feet, and Yount Lee Oil Co.'s No. 4 Dousierre-Latrielle is rigged up.

Edgerly—Calcasieu Parish

Rex Petroleum Co.'s No. 3 Hunter, an old well deepened to 3,944 feet, failed to make a flowing well at that depth and is being rigged up to pump. This company also is preparing to work over its No. 1 Louisiana Prairie Narroni, which was completed last July flowing 50 bbls. daily at 3,160 feet. Wilson-Broach's No. 2 Wilson, an old well, is drilling deeper at 3,367 feet.

Lockport—Calcasieu Parish

Vacuum Oil Co. and Gulf Refining Co.'s No. 3 Miller is waiting for casing cement to set to drill in and test at 4,390 feet. No. 7 Miller has been rigged up to work over and deepen from a former producing level at 4,439 feet. No. 21 Miller was bailing as the week closed, showing a little oil from sandy shale at a total depth of 3,815 feet. No. 4-A Farquahar is pulling screen to deepen after failing to flow at 3,807 feet. No. 3 Frieber & Wolf is drilling sandy shale at 4,766 feet. No. 6 Lock-Moore is drilling sticky shale at 3,811 feet, and No. 1 Henshaw Lemoin is in a sand with a slight showing at 2,638 feet.

Vinton—Calcasieu Parish

Gulf Refining Co.'s No. 45 Star Vincent is drilling gumbo at 3,300 feet. Marrs McLean's No. 1 G.&N.G. is perforated pipe at 1,500 feet to test a sand rock at that depth, and late in the week was bailing. Seiss Oil Syndicate's No. 10 Green Sanborn was bailing to test at 2,497 feet. Vinton Petroleum Co.'s No. 8 Rescue is drilling below 2,474 feet.

Hackberry—Cameron Parish

Calcasieu Oil Co.'s No. 4 Dorion is drilling rock at 2,967 feet, and No. 3 Valery is in rock at 2,450 feet. Cameron Oil Co.'s No. 1 Deuhon is drilling heaving shale at 4,001 feet. Yount Lee Oil Co.'s No. 17 Kelso Bayou is drilling sandy shale at 3,015 feet, and its No. 18 Kelso Bayou rock at 2,493 feet. The latter company's No. 8 School Land is a derrick.

Sulphur—Calcasieu Parish

Union Sulphur Co. late in the week was bailing to test its No. 730 fee following the completion of its No. 732 fee as a 2,000-bbl. well. No. 730 was to test a sand at 5,365 feet. This company's No. 731 fee is drilling sandy shale at 3,796 feet. No. 733 fee was drilling rock at 1,833 feet, while No. 734 was rigged up and ready to spud in. A derrick is up for No. 735 fee and locations have been made for Nos. 736 and 737 fee. Watson and associates' No. 1 Hunter is drilling around 4,000 feet.

Miscellaneous Fields

Rycade Oil Corp. and Humble Oil & Refining Co.'s No. 3 Hudson, Markham, Matagorda County, is down 1,125 feet where 13⅜-inch casing has been set. Humphreys Corp.'s No. 1 Higgins, Barbers Hill, Chambers County, is rigged up while Bennett Petroleum Co.'s No. 1 Smith is drilling around 5,000 feet. Sinclair Oil & Gas Co.'s No. 4 Norton, Damon Mound, Brazoria County, is drilling hard sand and lime rock at 3,413 feet. Gulf Production Co.'s No. 17 Moore, Orchard, Fort Bend County, is drilling hard, sandy shale at 2,800 feet. No. 11 Moore, an old well being deepened, is drilling sticky shale at 3,781 feet. The Texas Company's No. 33 Koehler, Humble, Harris County, an old well being deepened, tested salt water at 2,650 feet and is pulling liner to deepen. Sun Oil Co.'s No. 44 River Bed, Humble, drilled through water sand at 2,660 feet. Cullen and associates' No. 2 Morris, Humble, is standing. At Raccoon Bend, Austin County, Humble Oil & Refining Co.'s No. 2 Urban is drilling hard sand at 346 feet. No. 1 Kearns, same field, is drilling shale at 1,036 feet, and No. 1-B Grawunder, sand and boulders at 324 feet. A rig is up for No. 1 Beal, a derrick for No. 1 Mitchell and locations are standing for No. 2 Walton and No. 1 A. Grawunder. Humble's No. 1 Camp at DeWalt, Fort Bend County, is reaming at 3,553 feet, and No. 1 Deatherage is stading at 4,111 feet in sticky shale.

In South Louisiana, Rycade Oil Corp.'s No. 3 Atchafalaya fee, Bayou Bouillon, St. Martin Parish, is drilling at 1,460 feet. Locations have been made for Nos. 4 and 5 Bouillon fee. Gulf Refining Co.'s No. 2 Fannie Kling, Loreauville, Iberia Parish, is drilling sand and gravel at 624 feet. No. 6-Z State is rigged up. This company's No. 10 United Land Co. at Sorrento Dome, Ascension Parish, is being rigged up, following the abandonment the past week of No. 9. Gulf's No. 11 Lutcher-Moore and No. 12 Lutcher-Moore, Starks, Calcasieu Parish, have been rigged up. No. 12 Industrial is drilling below 685 feet after setting 10-inch surface string at that depth. Pure Oil Co.'s No. 6 Yount Lee Oil Co., Sweet Lake, Cameron Parish, is down 4,675 feet where 9-inch casing has been set in gumbo.

Miscellaneous Wildcats

Texas

Austin County—Gulf Production Co.'s No. 1 Jackson, San Felipe Dome, is drilling gumbo at 1,612 feet. Except at Raccoon Bend other tests are standing.

Brazoria County — Roxana Petroleum Corp.'s No. 2-A Pool, Allen Dome, is drilling hard, dark shale at 5,507 feet. No. 5 Allen is in sand and boulders at 2,056 feet. The rig for No. 3 Reece is standing. Harrison Oil Co.'s No. 1 Perry, Stratton Ridge, is drilling water sand at 3,304 feet. Moody Corp.'s No. 1 Jamison, 3 miles west of Angleton, is in rock at 4,158 feet.

Chambers County—Price Oil Co.'s No. 1 Lost Lake, on Lost Lake Dome, is sidetracking at 2,786 feet. No. 2 Lost River has cemented a string of casing at 330 feet. No. 1 Old River Lake is coring soft sand at 4,867 feet.

Colorado County—U. S. Oil & Gas Co.'s No. 1 Swank, South of Rock Island, which has been shut down a short time at 4,040 feet, is going deeper and late in the week was at 4,048 feet in black shale which was thought might be the Jackson. Rich Oil Corp. has a rig up for another test in the Columbus dis-

(Continued on Page 114)

KANSAS WILDCATS

(Continued from Page 44)

P. H. Ballew's No. 1 Bright, NE cor. SW Sec. 22-27-12..Shut down 1,210 ft.
Ladow Gas Co.'s No. 1 Lawrence, SE cor. SW SE Sec. 4-27-13 .....Shut down 1,100 ft.
Ward McGinnis' No. 1 Finch, NE cor. SW Sec. 11-26-12..Dry and abandoned 1,720 ft.
Ward McGinnis' No. 1 Robbins, NE cor. NW Sec. 16-24-9..Rig.
Hanley et al's No. 1 Peterson, NW cor. NE SE Sec. 4-26-13 .....1,000,000 ft. gas, 1,528-31 ft.; completed.
W. H. Swartz' No. 1 Thomas, SW cor. NW Sec. 17-22-13..Dry and abandoned 1,850 ft.
O. W. Culy et al's No. 1 Hoover, NE cor. SE Sec. 15-27-13 .....Dry and abandoned 1,483 ft.
Sharpless et al's No. 1 Corper, SW cor. SE SE Sec. 22-23-12 .....Dry and abandoned 1,310 ft.

HARPER COUNTY

Amerada Pet. Corp.'s No. 1 Mendiville, C SE SE Sec. 23-34-6w .....Drlg. 5,357 ft.
Sam Jarvis' No. 1 Wyckoff, SW cor. NW Sec. 11-34-4w...Wilcox 4,755-78 ft.; hole full of water; dry and abd. 4,802 ft.
Sam Jarvis' No. 1 Warneke, SE cor. SW Sec. 4-34-3w...Drlg. 4,572 ft.

HARVEY COUNTY

Roxana Pet. Corp.'s No. 1 Haury, NE cor. SW SE Sec. 11-23-2w .....4,000,000 gas 2,961-90 ft.; shut in as gas well.

(Continued on Next Page)

R. S. Austin's No. 1 Nieman, SW cor. SW Sec. 21-24-2....Shut down 1,200 ft.

JEFFERSON COUNTY

Wichita Oil Co.'s No. 1 Simpson, NW cor. SW SW Sec. 19-10-17 ....Rigged up and shut down.

JACKSON COUNTY

Garvin & Morton's No. 1 Lutes, SW cor. NW NW, Sec. 27-7-15 ....Drlg. 590 ft.

LANE COUNTY

Robinson et al's No. 1 Dickerson, SW cor. NW SE Sec. 11-18-27w ....Casing 2,625 ft.

MARION COUNTY

Youker et al's No. 1 Fronta, SW cor. NW NE Sec 21-18-4 ....Shut down 2,427 ft., hole full of water.

Prairie O. & G. Co.'s No. 1 Theis, NW cor. NW Sec. 151-9-4 ....Dry and abandoned 2,715 ft.

Graham Bros.' No. 1 Nelson, NE cor. SE Sec. 30-17-5....Sand 2,295-2,380 ft.; pumping 30 bbls.; completed.

R. L. Bobst's No. 1 Schwab, SW cor. NE Sec. 31-16-5.....Dry and abandoned 2,345 ft.

Courtney B. Davis' No. 1 Rampel, SE cor. NE SE Sec. 7-19-3 ....Casing 2,290 ft.

Raymond Gear's No. 1 Larson, NW cor. SW NW Sec. 18-21-4 ....Drlg. 750 ft.

Empire Oil & Ref. Co.'s No. 1 Siebert, SW cor. SE Sec. 28-20-2 ....Drlg. 1,350 ft.

J. E. Hanna's No. 1 Pankratz, NE cor. NE SW Sec. 13-20-3 ....Rig.

MEADE COUNTY

Blackwell O. & G. Co.'s No. 1 Beyer, SE cor. NW SE Sec. 9-33-28w ....500,000 ft. gas and 2 bailers water total depth 4,356 ft.

MITCHELL COUNTY

Ben Gurley et al's No. 1 Crombil, C NE NE Sec. 32-9-7w ....Hole full water 3,365 ft.; drilling.

MORRIS COUNTY

Cress & Hawley's No. 1 Grendier, NW cor. SE Sec. 16-15-5 ....Dry and abandoned 2,210 ft.

Hugh Faulder's No. 1 Wendt, SW cor. SE SE, Sec. 18 15-5 ....Rigging up.

Matthews et al's No. 1 Walters, SW cor. NE Sec. 14-15-5. Dry and abandoned 2,405 ft., corrected depth.

Skelton et al's No. 1 Iles, NW cor. NW Sec. 25-16-5 .....Rig.

O'Day et al's No. 1 Scott, NE cor. SW Sec. 6-16-6 .....Rig.

McPHERSON COUNTY

Phillips Pet. Co.'s No. 1 Wright, SW cor. NW NW Sec. 9-19-4 ....Dry and abandoned 2,420 ft.

Derby Oil Co.'s No. 1 Bughman, C SW SW Sec. 21-18-2w. Dry and abandoned 3,502 ft.

Davis & Hazlett's No. 1 Gray, NW cor. SE NW Sec. 20-20-3w ....Dry and abandoned 3,830 ft.

Galt-Brown's No. 1 Blaine, C NE Sec. 18-17-1w ....Underreaming to drill down to Wilcox sand.

John Heron's No. 1 Vosshell, NE cor. NE Sec. 9-21-3w...Shut down 500 ft.

Lariaux et al's No. 1 Martinson, NE cor. SE Sec. 9-19-3w. Rig.

McPherson Gas Co.'s No. 1 Stein, SW cor. NE SW Sec. 17-18-1w ....Drlg. 1,220 ft.

A. E. Meyers, No. 1 Papp, SW cor. SW NE Sec. 10-18-2...Rig.

McPherson Gas Co.'s No. 1 Gustafson, C NE Sec. 9-17-2w ....Spudded.

W. C. Newman's No. 1 Diepenbrock, NW cor. NE Sec. 2-17-1w ....Shut down 1,985 ft.

OTTAWA COUNTY

Anderson et al's No. 1 Bank, NE cor. NW Sec. 28-10-2w..Shut down 2,380 ft.

PAWNEE COUNTY

F. C. Troupe's No. 1 Lovett, CEL NE NE Sec. 31-21-16w. Shut down 1,560 ft.

OSBORNE COUNTY

T. C. Johnston's No. 1 Cooley, C NW NE Sec. 15-8-16w...Drlg. 2,625 ft.

POTTAWATOMIE COUNTY

J. J. Crawford's No. 1 College, CWL SW NE Sec. 11-10-12 ....Dry and abandoned 2,250 ft.

PHILLIPS COUNTY

Watsonian Oil Co.'s No. 1 Marklein, NE cor. SW Sec. 21-3-19w ....Drlg. 1,150 ft.

RENO COUNTY

Empire and Marland's No. 1 Williams, SE cor. NE Sec. 5-26-4w ....Drlg. 3,905 ft.

RICE COUNTY

Allison & Fitzwilliams' No. 1 Poland, NE cor. SW NE Sec. 36-19-8w ....Cellar.

ROOKS COUNTY

J. C. Findeiss' No. 1 Overholtzer, C SE Sec. 30-9-16w...Dry and abandoned 3,503 ft.

Phillips Pet. Co.'s No. 1 Overholtzer, C SE Sec. 30-9-19w..Drlg. 2,960 ft.

Empire G. & F. Co.'s No. 1 Woodrill, NE cor. SE NW Sec. 15-8-18w ....Drlg. 2,520 ft.

Krueger et al's No. 1 Poore, NE cor. NE Sec. 14-8-16w...Shut down 2,420 ft.

Burford & Brimm's No. 1 Toxa, NE cor. SW SE Sec. 22-19-17w ....Spudded and shut down.

Krueger et al's No. 1 Poore, NE cor. NE Sec. 14-8-16w..Drlg. 2,560 ft.

Skelly & Mid-West's No. 1 Jones SW cor. NE NW Sec. 28-7-16w ....Drlg. 3,354 ft.

RUSH COUNTY

Danciger Valerius & Chenney's No. 1 Schuerman, NW cor. SE NW Sec. 27-17-17w ....Fishing 3,250 ft.

Sinclair Oil & Gas Co.'s No. 1 Berching, NW cor. NE NW Sec. 9-16-16w ....Drlg. 370 ft.

RUSSELL COUNTY

Douglas Oil Co.'s No. 1 Stoppel, SE cor. SW NE Sec. 25-14-11w ....Dry and abandoned 3,505 ft.

Hartman & Skaer's No. 1 Taylor, C SW Sec. 35-13-12w..Shut down 3,357 ft.

Midwest Exploration Co.'s No. 1 Austin, NE cor. NE Sec. 36-12-16w ....Fishing 3,045 ft.

Gypsy Oil Co.'s No. 1 Cook, C NE SE Sec. 10-13-15w.....Drlg. 2,986 ft.

Stearns & Streeter's No. 1 Haise, NE cor. SE SE Sec. 36-12-15w ....Drlg. 2,963 ft.

Joe Liggett's No. 1 Maier, SE cor. NE SE Sec. 8-11-15w..Drlg. 2,210 ft.

SALINE COUNTY

M. Esty et al's No. 1 Peterson, C NE Sec. 6-16-5w.....Spudded and shut down.

Boyle et al's No. 1 Miller, SW cor. SE Sec. 21-16-1w.....Rig.

Skelton et al's No. 1 Iles, NW cor. NW Sec. 25-16-5 ....Rig.

Nathan Jones et al's No. 1 Robertson, NW cor. SW Sec. 27-14-2w ....Drlg. 1,150 ft.

SEDGWICK COUNTY

Bu-Vi-Bar Pet. Co.'s No. 1 Wright, SE NE SE Sec. 12-26-1w ....Sand 3,367-68 ft., flowing 1,700 bbls. daily.

Maglason et al's No. 1 Buckles, NW cor. SE Sec. 3-28-1w..Shut down 250 ft.

Barnsdall Oil Co.'s No. 1 Faber, SW cor. NW Sec. 6-27-1w ....Rig.

Allison & Fitzwilliams' No. 1 Doane, NE cor. NW NE Sec. 24-26-1w ....Drlg. 1,727 ft.

Barnsdall Oil Co.'s No. 1 Gilroy, NW cor. SW SW Sec. 8-26-13 ....Drlg. 700 ft.

SEWARD COUNTY

F. B. Slick's No. 1 Pyle, NE cor. NE Sec. 14-33-33w....Drlg. 4,825 ft.

SHERMAN COUNTY

A. L. Henson et al's No. 1 Murry, NE cor. SE NW Sec. 22-7-40w ....Shut down 3,035 ft.

STEVENS COUNTY

W. Sidwell et al's No. 1 Kelly, SW cor. NE Sec. 16-34-38w ....Shut down 800 ft.

Trees Oil Co.'s No. 1 Thompson C NE SW Sec. 3-35-38w..Casing trouble 600 ft.

SUMNER COUNTY

Helmerich & Payne's No. 1 Broadhurst, SE cor. NE NE Sec. 15-33-2e ....Dry and abandoned 3,627 ft.

McCulloch Oil Co.'s No. 1 Teettle, SW cor. NE Sec. 29-34-1w ....Spudded.

Gypsy Oil Co.'s No. 1 Williams, NW SE SW Sec. 16-35-2w ....Drlg. 2,580 ft.

Helmerich & Paynes' No. 1 Warlick, SE cor. NE Sec. 8-34-2 ....Drlg. 400 ft.

Olstot et al's No. 1 Barlow, SE cor. SE Sec. 22-33-3w....Casing 4,417 ft.

George Dickey's No. 1 Knox, SW cor. NE Sec. 3-35-1w...Drlg. 2,831 ft.

Olstot et al's No. 1 Volker, NW cor. NE Sec. 9-35-1 ....Rig.

Davidson and others' No. 1 Strickland, SW cor. SE Sec. 12-35-1w ....Rig.

Rolland et al's No. 1 Pickens, NE cor. NW NE Sec. 27-30-14w ....Drlg. 3,912 ft.

TREGO COUNTY

Central Commercial Oil Co.'s No. 1 Ellis, NE cor. SW NE Sec. 20-13-21w ....Drlg. 1,650 ft.

WASHINGTON COUNTY

McCool & Vincent's No. 1 Linn, NW cor. NE Sec. 27-4-3..Rig.

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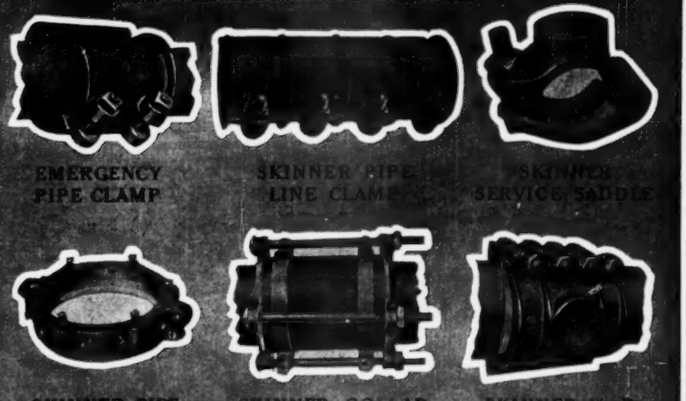

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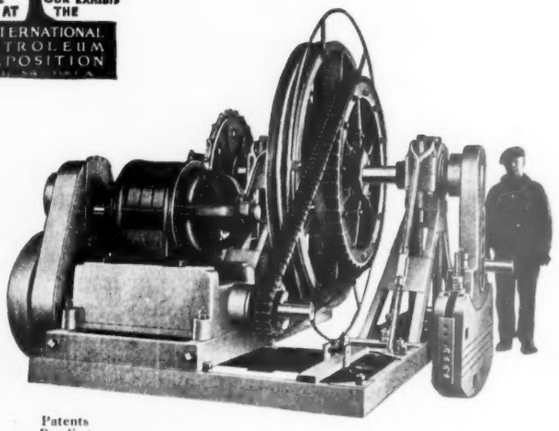

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COFFEYVILLE, KANSAS

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WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 42)

BLAINE COUNTY

Lowen and others' No. 1 Unknown, NW cor. SW NW Sec. 27-16-11w ..... Spudded and shut down; renewing leases.

W. J. Donnelly, trustee's No. 1 Dicken's NE cor. SE Sec. 26-15-12w ..... Drlg. 3,180 ft.

Ragland and others' No. 1 Unknown, C NW SW Sec. 13-19-10w ..... Rig.

MUSKOGEE COUNTY

Elk Drilling Co.'s No. 1 Jones, SW cor. SW Sec. 34-13-17 ..... Shut down 400 ft.

L. T. Haney's No. 1 Mitchell, SE cor. NW SE Sec. 33-13-18 ..... Drlg. 2,140 ft.

C. D. Bradley's No. 1 Unallotted, NE cor. SW Sec. 21-15-19 ..... Dry and abandoned 1,108 ft.

J. L. Slusher's No. 1 Nave, NE cor. SW NW Sec. 20-15-20 ..... Drlg. 450 ft.

HUGHES COUNTY

Galt-Brown Oil Co.'s No. 1 Burrey, C NW NE Sec. 14-4-9. Dry and abandoned 4,101 ft.

Bauer and others' No. 1 Penn, NW cor. SW NE Sec. 1-8-10 ..... Shut down 2,460 ft.

Fuhrman Petroleum Co.'s No. 1 Turner, NE cor. NW SE Sec. 26-9-10 ..... Dry and abandoned 3,180 ft.

W. J. Monahaim's No. 1 Pusby, C NW NE Sec. 14-4-9... Location abandoned.

Noble Oil & Gas Co.'s No. 1 Wickett, SE cor. SE Sec. 20-5-9 ..... Dry and abandoned 3,015 ft.

E. W. Whitney and others' No. 1 Moore, SE cor. SW Sec. 17-5-9 ..... Drlg. 1,602 ft.

Pure Oil Co.'s No. 1 Fixico, NE cor. SW Sec. 18-8-9..... Drlg. 3,375 ft.

Howard Petroleum Co.'s No. 1 Gilbert, NW cor. SE Sec. 25-8-10 ..... Drlg. 2,985 ft.

Gypsy Oil Co.'s No. 1 McGirt, NE cor. NW SW Sec. 21-6-8 ..... Drlg. 3,145 ft.

T. B. Slick, Inc.'s No. 1 Epperly, NW cor. NE NW Sec. 32-6-8 ..... Drlg. 4,555 ft.

OKLAHOMA COUNTY

Slick & Bailey's No. 1 Koester, C SE NE Sec. 18-13-3w.. Shut down 4,510 ft.

Cromwell & Franklin's No. 1 Thompson, SW cor. NE NE Sec. 15-12-2w ..... Drlg. 6,966 ft., show oil, pulling liner to shut off water.

Cromwell & Franklin's No. 1 Gross, SW cor. NE SW Sec. 22-10-2w ..... Shut down 4,702 ft.

Indian Terr. Ill. Oil Co.'s No. 1 fee, C SE SE Sec. 24-11-3w ..... 50,000,000 ft. gas 4,863-4,865 ft., drilling ahead.

CANADIAN COUNTY

Ramsey Brothers' No. 1 Newman, CSL NE Sec. 9-11-7w.. Dry and abandoned 6,010 ft.

LINCOLN COUNTY

Bu-Vi-Bar Petroleum Co.'s No. 1 School Land, C NE SE Sec. 16-13-4 ..... Wilcox 5,310-5,330; hole full of water; dry and abandoned.

OKFUSKEE COUNTY

Moose & Daniels' No. 1 Stidham, SW cor. NW Sec. 4-11-10 ..... Shut down 622 ft.

Dixie Oil Co.'s No. 1 Drew, NE cor. SW Sec. 8-13-10.... Rig.

SEQUOYAH COUNTY

Citizens Gas Co.'s No. 1 Johnson, NE SW NE Sec. 33-12-7 ..... Sand 1,215-25 ft.; 1,500,000 ft. gas shut in.

Cooper & Badger's No. 1 Young NW cor. NE NE Sec. 7-12-20 ..... Spudded.

Hunt and others' No. 1 Unknown, SE cor. NW SW Sec. 12-12-23 ..... Drlg. 600 ft.

PAWNEE COUNTY

Washoma Oil Co. and others' No. 1 Buffalo, SE cor. NE Sec. 33-22-5 ..... Shut down 2,360 ft.

POTTAWATOMIE COUNTY

Barnsdall Oil Co.'s No. 1 Guinn, SW cor. SW Sec. 16-7-5.. Dry and abandoned 4,417 ft.

Shaffer-Kilgore-Sykes' No. 1 Ives, C SE SE Sec. 12-10-3 ..... Wilcox 5,615-17; hole full water dry and abandoned.

Superior Oil Co.'s No. 1 Herminghausen, SW cor. NW NE Sec. 24-8-2 ..... Fishing 4,668 ft.

Davy & Detrick's No. 1 McGehee, SW SE NW Sec. 10-6-2 ..... Abandoned 4,988 ft.

Indian Terr. Ill. Oil Co.'s No. 1 White, NE cor. NE SW Sec. 21-7-5 ..... Dry and abandoned 4,287 ft.

Pure Oil Co.'s No. 1 Lindley, SE cor. SW SE Sec. 18-8-5. Simpson sand 4,098-4,115 ft.; completed, pinched in.

Roxana Pet. Corp.'s No. 1 Deister, NW cor. SE NE Sec. 20-6-5 ..... Dry and abandoned 4,271 ft.

T. B. Slick and Roxana Pet. Corp.'s No. 1 Hurst, SE cor. NW NW Sec. 17-7-2 ..... Casing 5,041 ft.

J. B. Slick's No. 1 School Land, SE cor. SE Sec. 16-6-5. Dry and abandoned 4,745 ft.

Tomlinson et al's No. 1 Whisenhurst, NW cor. NE SE Sec. 35-7-5 ..... Drlg. 1,320 ft.

Phillips Petroleum Co.'s No. 1 Parman, SE cor. SW Sec. 15-8-4 ..... Drlg. 3,730 ft.

Champlin Refining Co.'s No. 1 Foster, SW cor. NE SW Sec. 14-7-5 ..... Drlg. 1,714 ft.

CADDO COUNTY

Magnolia Petroleum Co.'s No. 1 Shelby, SW cor. SW Sec. 28-10-12w ..... Drlg. 4,150 ft. (corrected)

J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w.. Shut down 150 ft.

W. J. Hartley's No. 1 Galbreath, SE cor. NW SE Sec. 29-5-12w ..... Shut down 3,394 ft.

English Drilling Co.'s No. 2 Pruitt, CNL NW SE Sec. 22-6-10w ..... Rigged up and shut down

Red Bank Oil Co.'s No. 1 Shanklin, C NW Sec. 15-12-11w. Fishing cave 4,330 ft.

OSAGE COUNTY

Amerada Pet. Co.'s No. 1, NE cor. SW, Sec. 25-25-6 ..... Drlg. 1,212 ft.

A. D. Morton's No. 1, NE cor. SE Sec. 1-26-6..... Rig.

STEPHENS COUNTY

Wade-Martin & Smythe's No. 1 Vestal, NE cor. SE Sec. 20-2-5w ..... Drlg. 2,039 ft.

Stahl & Burris' No. 1 Jefferson, SE cor. NE NW Sec. 2-1-7w ..... Rigging up rotary.

SEMINOLE COUNTY

Prairie Oil & Gas Co.'s No. 1 Davis, NE SE Sec. 21-10-7. Drlg. 2,965 ft.

Prairie Oil & Gas Co.'s No. 1 Varnum, NW cor. SW SW Sec. 5-9-6 ..... Dry and abandoned 4,417 ft.

Magnolia Petroleum Co.'s No. 1 Viersen, SE SE NW Sec. 5-6-7 ..... Dry and abandoned 4,535 ft.

Fuhrman Petroleum Co. and Superior Oil Co.'s No. 1 Davis, SW SW SE Sec. 3-10-6 ..... Dry and abandoned 4,593 ft.

Superior & Fuhrman's No. 1 Fay, NW cor. SE SW Sec. 27-11-6 ..... Rigging standard tools 4,022 ft.

Magnolia Pet. Co.'s No. 1 Germany, SE cor. NW Sec. 30-9-5 ..... Drlg. 3,470 ft.

Burke-Greis Oil Co.'s No. 1 Cyrus, SE cor. NE NW Sec. 13-9-7 ..... Drlg. 1,065 ft.

Harris et al's No. 1 Stidham, SE cor. NW Sec. 30-9-8.... Drlg. 2,280 ft.

T. B. Slick's No. 1 Wood, NE cor. NE SW Sec. 26-7-6... Drlg. 4,447 ft.

C. B. Shaffer's No. 1 Carolina, SE cor. SW NE Sec. 4-6-7. Casing 4,372 ft.

E. W. Whitney's No. 1 Harjo, NE cor. NW NE Sec. 25-7-6 ..... Plugged back 4,325 ft. and shut down.

Shaffer Oil & Ref. Co.'s No. 1 Catchochee, SW cor. SW NE Sec. 18-10-7 ..... Wilcox 4,705-10 ft. hole; hole full water; plugging back to Cromwell sand, and set 5-inch casing 3,730 ft.

Prairie Oil & Gas Co.'s No. 1 Rogers, SE cor. NE SE Sec. 14-10-6 ..... Drlg. 4,547 ft.

Prairie Oil & Gas Co.'s No. 1 Foster, NW cor. NE NW Sec. 12-8-5 ..... Drlg. 4,167 ft.

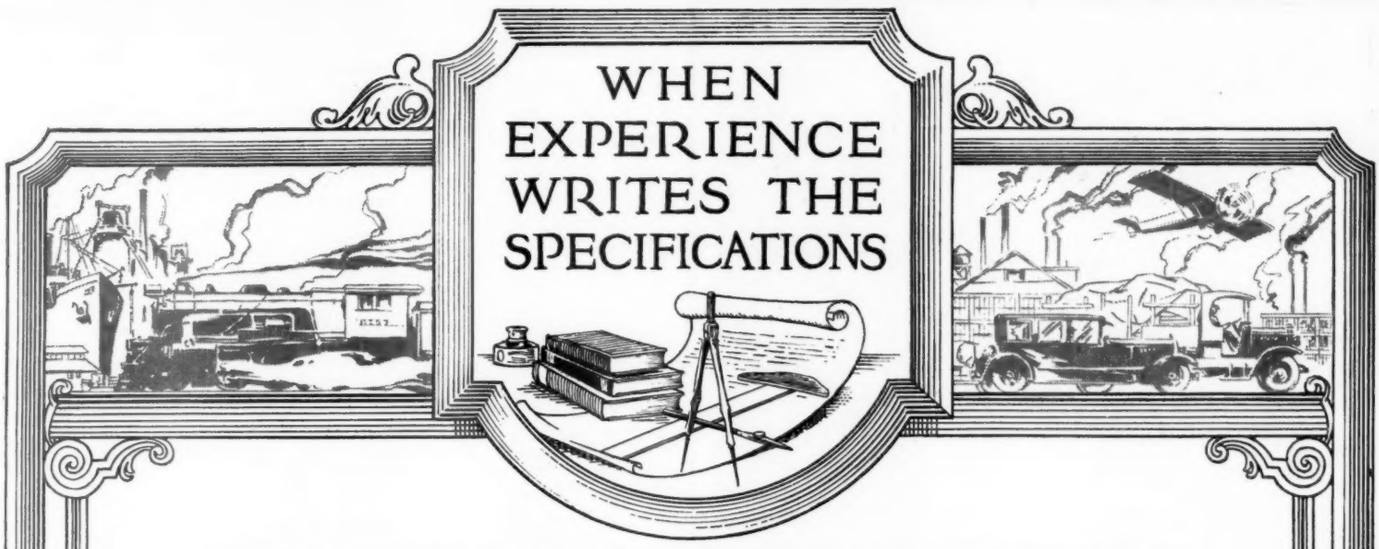
T. B. Slick, Inc.'s No. 1 Tiger, NW cor. SW SE Sec. 13-8-5 ..... Spudded.

Magnolia Petroleum Co.'s No. 1 Sissy, SW cor. NE Sec. 33-8-7 ..... Rigging standard tools 3,722 ft.

McCulloch Oil Co.'s No. 1 McGilbray, SW cor. SW NE Sec. 4-8-8 ..... Rig.

Empire Gas & Fuel Co.'s No. 1 Harjo, SW cor. NW SE Sec. 17-7-6 ..... Drlg. 1,690 ft.

Wigton & Long's No. 1 Jefferson, NW cor. NE Sec. 31-7-6 ..... Sand 1,152-1,190 ft.; pumping 30 bbls.



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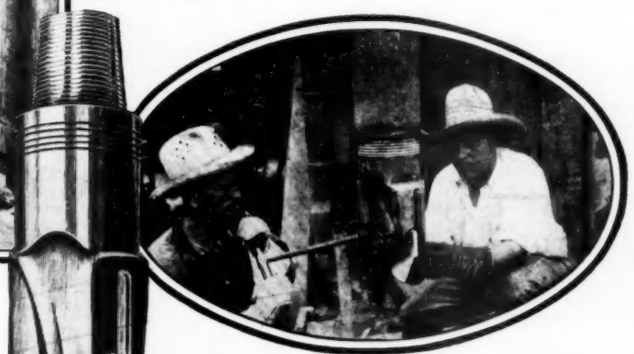

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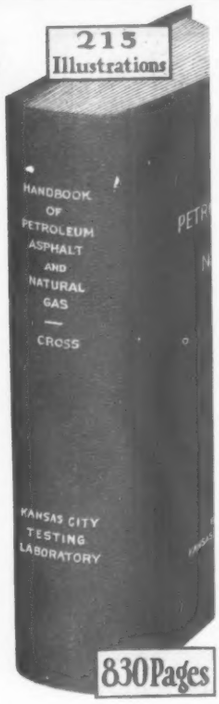

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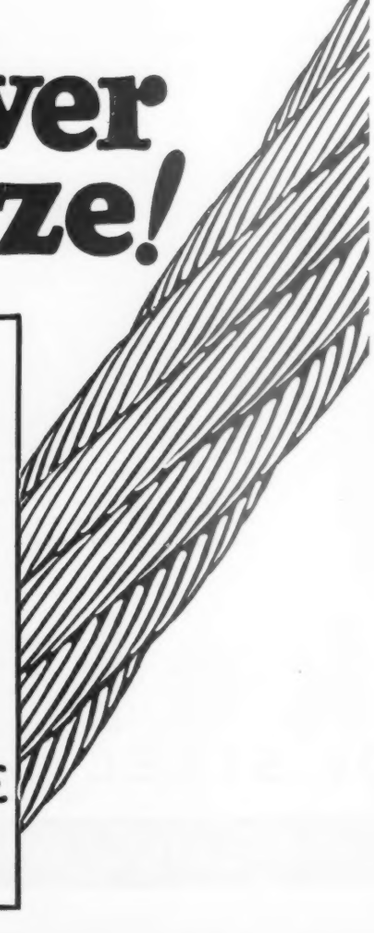

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MAJOR COUNTY

Smith and others' No. 1 Baker, NE cor. NW Sec. 35-22-11w ..... Abandoned 1,046 ft.
Randau & Mooney's No. 1 Parker, SE cor. NE NW Sec. 4-23-16w ..... Show of oil 1,235 ft.; shut down.

WOODS COUNTY

E. K. Miller's No. 1 Copenhavers, NW cor. NW Sec. 18-24-13w ..... Rig.

MURRAY COUNTY

Revels & Magee's No. 1 Labor, NW cor. NW Sec. 17-1-2.. Drlg. 1,305 ft.
Gilcrease Oil Co.'s No. 1 Wolfe, SW cor. NW Sec. 21-1-2.. Drlg. 2,815 ft.

DEWEY COUNTY

Huckaby & McCoy's No. 1 Perfect, NE cor. NE Sec. 9-18-15w ..... Fishing 4,345 ft.
Don Slfers' No. 1 Jordan, SW cor. NW Sec. 16-16-17w.... Spudded and shut down.

BECKHAM COUNTY

C. & H. Petroleum Co.'s No. 1 Barnes, SW cor. NW NE Sec. 32-9-22w ..... Shut down 3,460 ft.
Martin et al's No. 1 Cluck, NW cor. SE, Sec. 1-8-25w.... Location.
L. C. Hivicks' No. 1 Davis, C NW NE Sec. 4-11-26w..... Shut down 250 ft.
Producers Exploration Co.'s No. 1 Seidell, SE cor. SW SW Sec. 17-9-22w ..... Drlg. 2,260 ft.
Pferffel and others' No. 1-A Carter, NE cor. NE Sec. 35-9-22w ..... Shut down 1,500 ft.
Day Oil Co.'s No. 1 Ault, NW cor. NW Sec. 33-8-21w..... Spudded.

GRADY COUNTY

Remington and others' No. 1 Fryrear, SW SW NE Sec. 13-9-5w ..... Shut down 720 ft.
Dave Malernee's No. 1 Hall, SE cor. NW SW Sec. 8-3-7w. Dry and abandoned 3,502 ft.
Commercial Development Co.'s No. 1 Chrisman, C NE NE Sec. 21-4-7w ..... Dry and abandoned 3,360 ft.
Simpson & Fell's No. 1 Long, SW cor. SE SE Sec. 36 6-7w ..... Dry and abandoned 2,434 ft.
Simpson & Fell's No. 1 M. Long, SE cor. NW NW Sec. 36-5-7w ..... Abandoned.
J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w.... Spudded and shut down.
J. M. Henry and others' No. 1 Abraham, SE cor. NW Sec. 4-6-8w ..... Rig.
Commerce Development Co.'s No. 1 Taylor, C NE NW Sec. 4-3-7w ..... Drlg. 1,750 ft.
J. B. Nichols' No. 1 Brake, SE cor. NE SE Sec. 7-5-7w.. Shut down 2,307 ft.

MCINTOSH COUNTY

Marione Oil Co.'s No. 1 Sanders, NW cor. NE SW Sec. 10-9-18 ..... Drlg. 2,387 ft.
Wolfe et al's No. 1 Unknown, NW cor. SE Sec. 15-12-18.. Rig on ground.

CLEVELAND COUNTY

Daniels & LeWright's No. 1 Vandever, C SW Sec. 15-7-1w ..... Shut down 3,130 ft.

KIOWA COUNTY

Blue Mountain Oil Co.'s No. 1 Jones, SE cor. NW NW Sec. 17-5-14w ..... Shut down 530 ft.
Johnson & McDowell's No. 1 Thompson, SW cor. NE Sec. 6-6-15w ..... Shut down 1,725 ft.
Dave Malernee's No. 1 Van Kirk, NW cor. NW Sec. 35-7-15w ..... Shut down 858 ft. in granite.
A. C. Varner and others' No. 1 Bonham, CSL NW NW Sec. 5-6-18w ..... Shut down 1,127 ft.

CUSTER COUNTY

W. E. Witts' No. 1 Wellman, C SE Sec. 1-14-14w..... Rig and tools.

PONTOTOC COUNTY

Moore & Curran's No. 1 Allen, SE cor. SW SW Sec. 23-5-5 ..... Drlg. 1,240 ft.
C. J. Shervin and others' No. 1 Wright, NW NE NE Sec. 13-4-6 ..... Wilcox corrected 3,565-70 ft.; dry and abandoned.
Roxana Pet. Corp.'s No. 1 Folsom, NW cor. SW Sec. 20-4-4 ..... Rig.
Boles and others' No. 1 Rayburn, SW SE Sec. 35-4-6..... Lost underreamer; abandoned at 1,340 ft.
Texas Pacific Coal & Oil Co.'s No. 1 Stewart, C SW NE Sec. 11-5-8 ..... C.O. 3,435 ft.
American Oil Refining Co.'s No. 1 Jones, NE cor. NE Sec. 18-5-5 ..... Drlg. 1,280 ft.
Douglas Oil Co.'s No. 1 Sutton, C NW NW Sec. 10-3-8 ... Shut down 3,135 ft.

GARVIN COUNTY

R. F. Garland's No. 1 Strickland, SW NW SW Sec. 10-4-3 ..... Drlg. 2,930 ft.
Dixie Oil Co.'s No. 1 Perkins, SE NW Sec. 15-4-1..... Dry and abandoned 5,455 ft.

COMANCHE COUNTY

Jolly-Ogg Oil Co.'s No. 1 Neeley, SE NE Sec. 24-3-10w.. Dry and abandoned 3,014 ft.
Green and others' No. 1 Wilson, C NE SW Sec. 14-1-12w.. Drlg. 3,780 ft.

COAL COUNTY

McGraw and others' No. 1 Patton, SW SE NE Sec. 35-1-8 ..... Drlg. 4,446 ft.
Indian Territory Illuminating Oil Co.'s No. 1 Harris, SW cor. NW Sec. 10-1-11 ..... Drlg. 2,935 ft.
Robert Galbreath and others' No. 1 Jones, SW cor. SE Sec. 24-1-9 ..... Spudded and shut down.

JACKSON COUNTY

Altus Oil Co.'s No. 1 Northington, NE cor. NE Sec. 4-1-20w ..... Shut down 735 ft.

OKLAHOMA PANHANDLE
CIMARRON COUNTY

Ramsey Brothers' No. 1 School Land, NE SW SW Sec. 21-5-5 ..... Temp. abandoned 3,754 ft.
Ramsey Brothers' No. 1 Unknown, NW NE Sec. 27-5-5 .. Abandoned 4,110 ft.
Ramsey Brothers' No. 1 School Land, SE SE Sec. 34-4-1.. Abandoned 3,850 ft.
Valerius & Wilkinson's No. 1 Unknown, SE cor. NE Sec. 25-3-7 ..... Shut down 2,545 ft.
Skaer and others' No. 1 Mathis, SW NE NE Sec. 17-3-23.. Abandoned 3,170 ft.
Ross Fenton and others' No. 1 Graves, NE NE Sec. 2-2-9. Spudded and shut down.

TEXAS COUNTY

Danner Oil Co.'s No. 1 Graves, NE cor. SW SW Sec. 23-2-18 ..... Shut down 700 ft.
Dotton and others' No. 1 Baker, C NW Sec. 4-1-13 ..... Rig blown down.
Three Way Oil Co.'s No. 1 Cane, SW NW Sec. 11-1-18.... Hole full of water at 3,318-58 ft; shut down.
Conley and others' No. 1 Unknown, SE cor. NW Sec. 5-1-19 ..... Spudded and shut down.

SOUTHERN OKLAHOMA
BRYAN COUNTY

Green Oil & Ref. Co.'s No. 1 Kemp, SE cor. NW NW Sec. 28-8s-9 ..... Abandoned 600 ft.
Alexander & Oppenheimer's No. 1 Hampton, SE cor. NE Sec. 26-7s-11 ..... Shut down 1,425 ft.

MURRAY COUNTY

Gilcrease Oil Co. and Mohawk Drilling Co.'s No. 1 Wolfe, SE cor. NE Sec. 20-1-2 ..... Dry and abandoned 1,984 ft.
Alter and others' No. 1 Johnson, SW cor. NW Sec. 14-4-7. Spudded and shut down.

COTTON COUNTY

Cuyler & Pyson's No. 1 Thomas, SE cor. SE SW, Sec. 16-4-12w ..... Spudded and shut down.

JEFFERSON COUNTY

M. Mitchim's No. 1 Newcomb, SW cor. SE SE, Sec. 8-5-4w ..... Dry and abandoned 2,534 ft.
Amerada Petroleum Co.'s No. 1 Emerson, NW cor. SE SW Sec. 28-5s-8w ..... Casing 3,750 ft.

CHOCTAW COUNTY

Hugo Gray's No. 1 Smith, SE cor. SW NW Sec. 27-6s-16.. Dry and abandoned 1,540 ft.
Choctaw Petroleum Co.'s No. 1 Wilson, SW cor. SW Sec. 15-6-19 ..... Shut down 1,346 ft.

TILLMAN COUNTY

Bray and others' No. 1 Barker, NE cor. SW NW Sec. 9-1-15w ..... Shut down 805 ft.
A. J. Bundy's No. 1 Hayster, NE cor. SW SE Sec. 23-2-17w ..... Dry and abandoned 630 ft.
A. N. Pearson's No. 1 Mounts, SW cor. SW Sec. 3-5s-15w. Dry and abandoned 2,015 ft.
Landfair and others' No. 1 Smith, SE SW SE Sec. 6-2s-16w ..... Shut down 2,485 ft.

STEPHENS COUNTY

Clark & Cowden's No. 1 Watkins, SE cor. NE SW Sec. 22-2-7w ..... Dry and abandoned 2,500 ft.

JOHNSTON COUNTY

Wapanucka Oil Co.'s No. 1 Banks, Sec. 28-2s-9 ..... Shut down 1,530 ft.
Bush Creek Oil Co.'s No. 1 Kirby, SE cor. NE NW Sec. 9-4-7 ..... Shut down for casing 405 ft.
Smith & Kinsley's No. 1 Lane, SE cor. NW Sec. 29-1-7... Drlg. 775 ft.
Wirt Franklin Pet. Co.'s No. 1 Wilkes, SW cor. SE Sec. 18-4-4 ..... Dry and abandoned 4,505 ft.
Wirt Franklin Pet. Co.'s No. 1 Foster, CNL NW SW Sec. 35-4-4 ..... Dry and abandoned 1,375 ft.

SOUTHWEST WILDCATS

(Continued from Page 46)

out of the well in such amounts as to hinder drilling and as a result casing was secured late last week to be set below the 346-foot sand.

National Oil Co. would have been started on its No. 1 Melcher in Fayette, all of the machinery being on the ground except the boiler, but the boiler on a truck is stuck in the mud and must wait for roads to dry.

A whole flock of wildcats in the northern part of Caldwell and Guadalupe Counties have been delayed by rains. They were mentioned in The Oil and Gas Journal last week. None of them has been able to start. Col. Billy Mayfield's No. 1 McColl in Bastrop County, north of this area which had a gas sand at 592 feet that looked big enough to test out, could not get the 10-inch casing in due to a boulder and last week hauled out a string of smaller casing and will try that.

Mardon Oil Co.'s No. 1 Jim Clamp in the south central part of Kinney County is down 1,900 feet in the Buda lime and expecting to stop early this week. Buda lime is very hard. The Eagleford showed some oil and the intention is to put in a string shot and try and make a well.

Duval County

National Oil Co.'s No. 2 Ball, Ball ranch, 300 feet to north and west lines of Block 5 of subdivision of the ranch, is moving on.

Starr County

The Texas Company's No. 1 H. A. Russell, Porcion 69, located 150 feet to south and east lines of most northerly SE cor. of Block 173-A, is location.

Webb County

William R. Jewell's No. 1 J. M. Gutierrez, Survey 857, Block 8, located 150 feet to south and west lines, is standing at 80 feet. Callaghan Land & Pastorial Co.'s No. 2 Callaghan, Survey 440, located 2,210 feet to south line and 2,090 feet to east line, is drilling at 900 feet. Louis Hausman and others' No. 1 Callaghan, Survey 440, located 166 feet to south line and 1,428 feet to east line, is drilling at 400 feet.

Zapata County

R. V. Hill's No. 2 Ramirez, Survey 627, located 600 feet to northeast lines and 425 feet to northwest lines, has resumed drilling at 902 feet. National Oil Co.'s No. 1 Don B. Adams, Share 8, Borrego grant, center of N half of Section 11, Block 4, of the subdivision of the ranch, is moving in machinery.

Bastrop County

Gypsy Producing Co.'s No. 1 Lottman estate, east of Bastrop, is shut down at 2,146 feet. A. A. Loomis is making location for test in the John W. Bunton Survey. Col. Billy Mayfield's No. 1 McColl, Stephen F. Austin Survey, 450 feet south of the river and 750 feet to east line of farm, at 592 feet has loose boulder at 272 feet that is delaying setting casing, and test is showing some gas and oil. John Storey's No. 1 Ed Pendergrass, J. B. Blalock Survey, center of tract, is building derrick. Sun Oil Co.'s No. 1 E. C. Keicke, Solomon Duty Survey No. 9, located 4,150 feet to east line and 150 feet to north line, is drilling at 700 feet.

Bexar County

Allen Burnam's No. 1 Ward, A. A. Gardiner Survey, southwest of Martinez, is sidetracking at 600 feet. Houston Oil Co.'s No. 1 C. N. Georgiadis, Domingo Losoya grant, 1,000 feet north of Carmen Cemetery, is drilling in Austin chalk at 2,280 feet. Marland Oil Co.-Sun Oil Co.'s No. 1 J. B. Stewart, Manuel Manjarias Survey, 200 feet northeast and southeast of E cor. of E. B. Simmons farm, is drilling at 2,020 feet.

Bee County

Hurador Oil Co.'s No. 1 G. R. Ray, northeast of Pettus, is shut down at 2,918 feet. D. Hewitt's No. 1 Hicks is drilling at 810 feet; No. 1 Ruckman, Franklin Lewis Survey, 800 varas to south and west lines, is drilling at 500 feet; No. 1 Vogus, Ralph B. Narcy Survey, 200 varas to south line and 976 varas to west line, is shut down at 500 feet; No. 1 Schultz is shut down at 1,505 feet.

Blanco County

C. W. Bates' No. 1 Herman Massey, Henry Manton Survey, 920 feet to north line and 660 feet to east line, is shut down at 214 feet. Robert Rodson's No. 1 Glasscock, Survey 50, 150 feet to CEL, is drilling at 665 feet.

Caldwell County

Fred Adams & Lyles' No. 1 Oran W. Cliett, S. B. Morrison Survey, 4,800 feet to southwest and northeast lines, has derrick going up; Fred Adams is making location for test in the Gideon Pace Survey, northeast of Lytton Springs. Cranfil & Reynolds is making location one-half mile northwest of Lytton Springs. De-Tex Oil Co.'s No. 1 Hardeman is standing at 3,075 feet. John V. Edwards' No. 1 W. C. Caldwell, Cornelius Crenshaw Survey, 600 feet to south line and 300 feet to east line, is moving in derrick lumber. Louis P. Schawe's No. 1 Schawe. Thomas Maxwell Survey, 150 feet southwest of old deep water well, is in top of chalk at 790 feet and drilling.

Comal County

George Kruger's No. 1 Uecker, A. Gaytean Survey No. 198, located in SE cor., is drilling at 100 feet.

Colorado County

National Oil Co.'s No. 1 H. T. Brandt, Freeman Pettus league, 150 feet to south line and 1,000 feet west of highway, is location.

DeWitt County

Alexander & Smith's No. 1 G. Dolgner, P. Dowlearn Survey, is location 1,200 feet to northwest lines and 150 feet to southwest lines. Empire Southern Oil Co.'s No. 2 Smith. Survey 3, is shut down at 3,150 feet. Piligrim Oil Co.'s No. 1 is location in the William G. Hill Survey, 6 miles west of Yorktown.

Edward County

McMan Oil & Gas Co.'s No. B-1 Walter Schreiner, H.E.&W.T.Ry. Survey, Section 50, Block F, 330 feet to south and east lines, is shut down at 2,130 feet in shale. Magnolia Petroleum Co.'s No. 2 Whitehead, Section 88, G.C.&S.F. Ry. Survey, is drilling at 1,760 feet. Segale Oil Co.'s No. 1 Neal, G.C.&S.F. Ry. Survey No. 2, located 1,000 feet to north line and 740 feet to east line, is moving in rig.

Frio County

Piligrim Oil Co.'s No. 2 Blackaller (formerly McIntyre & Sanger), James Gouley Survey, is drilling at 3,147 feet. Fred Charleboix's No. 1 Escenbury, Edward Gallagher Survey No. 789, located 500 varas to north line and 1,200 varas to west line, is location.

Fayette County

Marshall & Moore Oil & Gas Co.'s No. 1 Cole is moving in heavier power at 1,450 feet. National Oil Co.'s No. 1 J. C. Melcher, S. M. Williams League No. 1, located 300 feet to north and east lines, has been delayed spudding in by heavy rains. R. E. Phalon's No. 1 Cervenka, Fayette County school lands, Blocks 97 and 102 (formerly Williams & Phalon), at 1,808 feet total depth, is to set casing at 346 feet to case off shallow gas.

Goliad County

C. W. Simpson's No. 1 Ideus, W. H. Pendleton Survey, 156 feet to north line and 540 feet to west line of lease, is shut down at 2,323 feet.

Guadalupe County

J. J. Christie's No. 1 Taylor Thomas, G. Chotwell Survey, 1,100 feet to southwest lines and 1,130 feet to southeast lines, is drilling at 923 feet. T. H. Poole's No. 1 C. Woehler, John King Survey, 310 feet to north line and 210 feet to east line, is rigging up. Towns & Porter's No. 1 McKinney, J. Hinds Survey, 300 feet to south line and 3,247 feet to west of river, is shut down at 2,670 feet to work on boiler. Wolf Creek Oil Co.'s No. 1 Mrs. L. Hocke, Harriett Cottle Survey, is location 150 feet to north and west lines.

Gonzales County

Alexander-Smith & Capps' No. 1 Dora Louise Billings, George Guinn Survey, 60 caras to northeast lines and 700 varas to southeast lines, is drilling at 2,815 feet. Dunning & Peirce's No. 1 Mrs. M.

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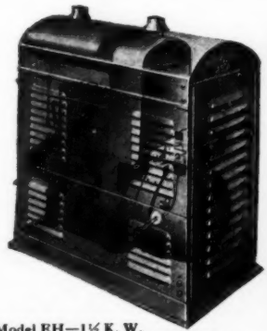

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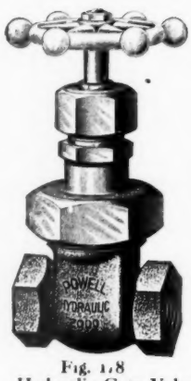

Fig. 178
Hydraulic Gate Valve

DUE to their unfailing service on water, steam, gas, oil, air and lines controlling solutions destructive to bronze or iron, Powell Valves are used extensively in the oil well, field and refinery service.

Made in the full range of types and sizes, you can standardize on Powell Valves and eliminate pipe line faults due to valve leakage.

Fig. 400
"Pilot" Gate Valve

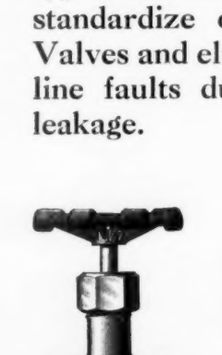

Fig. 190
"Irenew" Globe Valve

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CINCINNATI, OHIO

Keepers, R. Ward Survey, is moving in heavier power at 203 feet. W. D. Flynn's No. 1 Wilhausen, S. Bateman Survey, east central part of tract is drilling at 4,800 feet. W. G. Malone's No. 1 Mrs. D. G. Staton, J. M. Salinas Survey, 375 feet to southwest lines and 1,275 feet to northwest lines, is shut down at 660 feet on rock. The Texas Company's No. 1 Bateman, A. Zumwalt Survey, 150 feet to south and east lines, has been spudded in. L. P. Unkel's No. 1 Lumm & Bouldin, R. Ward Survey, Block 10, located 570 feet to CSL, is shut down at 660 feet.

Hays County

Estess-Moore & King's No. 1 C. N. Sledge, Hunton & Jones Survey, 285 feet to northwest lines, is coring at 720 feet. J. E. Rodgers' No. 1 Hohenburg, 2½ miles east of San Marcos, is shut down at 2,189 feet.

Jackson County

J. B. Douglas' No. 1 C. O. Lowrance, John McHenry Survey, 720 varas to northwest lines and 3,700 varas to southwest lines, is drilling at 2,210 feet. The Texas Company's No. 1 W. C. Moore, I.&G.N. Survey No. 208, located 5,108 feet to south line and 150 feet to west line, is drilling at 2,100 feet in shale. Wright Brothers' No. 2 Classen, 1,500 feet north 10 degrees west of No. 1, is down 1,615 feet in gumbo; No. 7 Drushel, T. Rodriguez Survey, 900 feet due east of No. 3, is drilling at 1,600 feet.

Jim Wells County

Cushing Oil & Gas Co.'s No. 2 M. Perez, La Tinaja de Lara grant, 4,319 feet to west line and 455 feet to north line, at 1,691 feet is waiting on fuel oil.

Karnes County

Reynosa Oil Corp.'s No. 3 Butler is location in Reynolds Subdivision of P. B. Butler 5,600 acre tract.

Kinney County

Mardon Oil Co.'s No. 1 Jim Clamp, Survey 346, Section 1,492, is drilling at 1,820 feet in hard lime since 1,740 feet.

Maverick County

Ryan Consolidated Petroleum Co.'s No. 1 Indio, Survey 14, center, is sidetracking at 4,600 feet. Rycade Oil Corp.'s No. 3 Sullivan, Section 71, Block 7, is drilling at 2,800 feet; No. 2 Chittim, Section 158, Block 7, is shut down at 7,300 feet for repairs.

Medina County

Carl G. Cromwell's No. 1 Taylor, Section 135, Block 28, located 210 feet to north line and 155 feet to east line, is shut down at 350 feet. California-Medina's No. 1 Rothe, Survey 1,012, at 3,278 feet is trying to cement off cave and has bailer stuck in the hole. Holt's No. 1 Henry Batot, 4 miles southwest of Hondo, is drilling at 250 feet. W. R. Painter's No. 1 Muennink, H. Castro Survey No. 367, is down 360 feet. W. T. Richardson's No. 1 Tom Bendele, Survey 593, located 150 feet to south line and 1,000 feet to west line, is trying to set casing to shut out water. Cecil Switzer's No. 1 Zerr, Survey 459, is drilling at 3,485 feet.

Nueces County

Alamo Drilling & Leasing Co.'s No. 1 Gallagher, Survey 158, located 1,215 feet to north line and 650 feet to east line, is shut down at 2,015 feet caused by heavy rains. Nueces River Basin Development Co.'s No. 1 F. C. Allen, G. Farrier Survey, 1,596 feet to south line and 474 feet to west line, is drilling at 2,409 feet in hard packed sand at 2,370 feet tested dry.

Refugio County

Dunlap & Wilkinson's No. 1 Rooke, 10 miles south of the field, 1 mile north of the Arkansas River and 700 feet to west of railroad, is drilling at 2,440 feet. J. M. Davis and Tom Horn's No. 1 Howard, Section 6, located 600 feet to north line and 2,640 feet to east line is rebuilding derrick blown down recently.

San Patricio County

C. I. Albertson's No. 1 Boscamp, W. R. Hazen Survey, Block 10, located 200 feet to CNL, is shut down at 1,420 feet. George Pickett's No. 1 Whitworth, NW NW, Section 60, is shut down at 3,250 feet; No. 1 Garrett is standing at 3,030 feet. F. P. Zoch's No. 1 F. C. Andrews, Block 7, Welder and Odem Subdivision, 200 feet to north and west lines, is drilling at 1,342 feet.

Travis County

Girven & Watson's No. 1 Zimmerman, G. Davis Survey, is location. J. W. Maddox' No. 1 Ecklund, P. McElroy Survey, is location 160 feet to east lines and 386 feet to south lines.

Uvalde County

Pure Oil Co.'s No. 1 J. D. Smythe, Survey 687, located 740 feet north and 146 feet east of SE cor. of Survey 20, is coring at 4,058 feet.

Victoria County

Houston Oil Co.'s No. 1 McFaddin, Survey 14, located 600 feet to northwest lines and 1,600 feet to southwest lines, has set surface casing. The Texas Company's No. 1 Kornfeuhr-Merintz, is drilling.

Val Verde County

East Del Rio Oil Co.'s No. 1 Russell, Section 183, is shut down at 3,325 feet. Independent Operator's No. 1 Whitehead, SE SE, Section 30, Block 4, is cleaning out at 3,968 feet. O. O. Owens and others' No. 1 Mills, Section 128, is shut down at 4,210 feet. W. V. Traves' No. 1 Wilson, Section 115, is shut down at 1,125 feet. Valvert Oil Corp.'s No. 1-A Bassett, C NE, Section 47, Block Y, is drilling at 815 feet.

LA.-ARK. WILDCATS

(Continued from Page 49)

ing for standard rig with 100 feet of oil and 25 feet of salt water standing in the hole from 10 feet of broken sand, total depth 2,265 feet, and will be an extension of the old field. About 5 miles northeast of this well and between 2 and 3 miles southeast of Champagnolle production, Walber and others' No. 1 Wilson tested salt water at 3,288 91 feet and have shut down at 3,304 feet.

Decman and others' No. 1 Hillman, Section 20-10-13, Dallas County, 2 miles northwest of Fordyce has been abandoned as a dry hole at 1,100 feet. The first hole was junked at 1,880 feet and the derrick skidded 38 feet west to drill this one. Reports from Fordyce state that the abandonment is only temporary while the operators reorganize and that drilling is to be resumed later on. Timberlake and others' Ouachita County wildcat, No. 1 Carnes, in Section 27-13-17, about a mile southwest of Camden, also was abandoned with salt water at 2,622 feet. They were dry in the Nacatoch topped at 1,460 feet and claimed an oil show at around 2,100 feet.

Nothing more is heard of the reported showing of high grade oil in the Pulaski County wildcat, Stiles and others' No. 3 Vera Stiles, in Section 27-1-11, a short distance east of Little Rock. Operators were sceptical, unable to find anything about the well to get excited over and after an investigation dropped the matter like a hot potato.

Water Behind Casing

Making one more experiment before finally abandoning the well, The Texas Company cemented back 12 feet in No. 1 Myers, Section 15-22-7, Morehouse Parish, the results of which convinced them that the 3,500 bbls. of salt water they got on last week's test was coming from behind the casing seat. So, it appears that another test will be made in the vicinity though where, when and by whom is not revealed. It was stated at The Texas Company's offices that it was not thinking of another test in the immediate future but the result of this last experiment may change the situation.

After last week's test, the company cemented back to 2,921 feet, 2 feet under the bottom of the 4-inch and 3 feet above the top of the sand, ran steel line to verify measurements, bailed, and got the same old 3,500 bbls. of water showing that the 4-inch had not accomplished a shutoff. Schaeffer Oil & Refining Co.'s No. 1 Louisville Cooperage Co., in Section 11-22-8, 8 miles east of the Myers well, is drilling black shale streaked with lime at 2,633 feet has not reached gas rock yet, though it is 140 feet lower than the Myers.

The Palmer Corp.'s No. 1 Carroll Land Co. in Section 21-19-11, East Carroll

Parish, topped the gas rock at 2,488 feet, 37 feet lower than in No. 1 O'Brien, its 51,000,000-foot gasser at 2,354 feet, 3 miles northwest. It made a drill stem test at 2,490 feet and got salt water and is drilling at 2,510 feet, still in the gas rock. Ruston Drilling Co. has begun drilling No. 1 Sondheimer in Section 24-18-11, Madison Parish, the first test on a block of 30,000 acres leased from the Sondheimer Hardwood Lumber Co., of Memphis. The tract is in the Tensas Basin swamps north of Tallulah and several miles south of the potential East Carroll Parish gas field, and it took 25 men three weeks to cut a road to location so that derrick timbers and the rig could be moved in.

To Deepen Test

Triangle Drilling Co. with Crystal Oil Refining Corp. and Empire Gas & Fuel Corp. interested with them, has gone back to No. 1 Bulkley in Section 9-20-13, Bossier Parish, in the middle of a 10,000-acre block north of Benton and will drill the wildcat deeper. It was abandoned as a dry hole at 2,700 feet last June but will be drilled to the middle Pine Island and shallow Cotton Valley producing formations. Warren & Carruthers, drilling No. 1 Ramsey in Section 33-13-16, 1½ miles west of the 5,000 and 6,000-foot tests drilled three years ago by the Pilgrim Oil Co., claim an oil and gas show in 6 feet of sand at 840 feet. They set 6-inch with rope packer at 830 feet, bailed and got their show and also 150 feet of mud, pulled the casing and reset for a test and are now drilling below 1,000 feet.

Northwest Louisiana Gas Co.'s No. 7 Pine Woods in Section 33-23-11, Sarepta-Spring Hill district of Webster Parish and 10 miles northwest of Cotton Valley, would not flow through 2½-inch tubing though it flowed about 20 bbls. by heads when bailed from around 3,032 feet, and is waiting for standard rig to pump, total depth 3,041 feet. Lloyd Harris, Canadian operator attracted to this part of the country by Cotton Valley, pioneered this particular area four or five years ago and developed considerable production along with much gas but its later development has been for gas. Location is just across the Bossier-Webster line from the Cartersville gas district in Bossier. Arkansas Natural Gas Corp. has a location for No. 1 L. & A. in Section 35-23-11.

North Louisiana

Bossier Parish

Doern and others' No. 1 Bollinger, Section 9-22-11, shut down in anhydrite at 4,317 feet since June 7, has been transferred to the list of wells temporarily abandoned. Morgan Oil Co. has refinanced its Bellevue wildcat in Section 26-19-11, which has made one or two good oil shows below the Bellevue horizon but cored a water sand from 1,150-54 feet, and resumed drilling the last report showing it coring another sand at 1,370 feet. Triangle Drilling Co. has gone back to No. 1 Buckley, Section 9-20-13, near Benton, and is drilling at 2,812 feet. It was a dry hole at 2,700 feet last June 7.

Caddo Parish

Gulf Refining Co.'s No. 1 Attaway, Section 1-18-15, is drilling hard blue shale with streaks of lime at 3,417 feet.

Catahoula Parish

The Texas Company's No. 1 Tensas, Section 4-10-6, is on a rock at 1,985 feet.

Claiborne Parish

Dixie Oil Co. has derrick up for No. 1 Gilbert in Section 27-21-5. Conrad F. Lowe's No. 1 Taylor in Section 29-22-6, is a derrick, last week's report that it had set 12½-inch at 100 feet and drilling at 200 feet, being in error. El Dorado Chief Oil Co. has set 100 feet of 12½-inch and is drilling at 225 feet on No. 1 Baker, Section 26-20-7.

DeSoto Parish

R. O. Roy has derrick up for No. 1 Sample in C NE SE, Section 1-13-14, his fourth location on a 13,000-acre block in Townships 13 and 14, Range 13. No. 1 Whitaker, Section 5-13-13, drilling deeper after testing dry at 2,500 feet, is waiting for 6⅝-inch plug to set at 2,775 feet. Warren & Carruthers' No. 1 Ramsey, Section 33-13-16, was dry on drill stem test at 840 feet and is drilling at 900 feet.

East Carroll Parish

Palmer Corp. is arranging to make a drill stem test at 2,490 feet on No. 1 Carroll Land Co., Section 21-19-11.

Franklin Parish

Davis and others' No. 1 Moore, Section 12-11-6, set 187 feet of 8-inch for surface string and is drilling at 645 feet.

Grant Parish

Bailey & Bevil set 102 feet of 10-inch and are drilling at 1,300 feet on No. 3 Swope, 540 feet north and 250 feet east SW cor. NW SW, Section 17-9-1e.

Madison Parish

Ruston Drilling Co. began drilling No. 1 Sondheimer in Section 24-18-11.

Monroe District

Morehouse Parish—Schaeffer Oil & Refining Co.'s No. 1 Louisville Cooperage Co., Section 11-22-8, is drilling in hard black shale with streaks of lime at 2,633 feet. Woodley Petroleum Co. is drilling at 2,805 feet in hard shale and lime on No. 1 Bonita, Section 3-22-9.

Ouachita Parish—Ouachita Natural Gas Co. set 12½-inch surface pipe at 234 feet on No. 2-B D'Arbonne, Section 25-19-2e.

Union Parish—Carter & Wingfield's No. 2-A Clark, Section 7-23-1e, is drilling at 925 feet. No. 3 Security Trust, Section 23-23-1e, set 80 feet of 10-inch surface pipe.

Red River Parish

Rock Petroleum Co.'s No. 1 Pierson, Section 12-14-11, is arranging to set 6-inch at around 1,761 feet. It drilled 9 feet into a sand and ran testing tool but could not get to the bottom of the 18 feet of rat hole on account of caving walls.

Richland Parish

Richland Operating Co.'s No. 1 Godfrey, Section 25-16-6, is drilling at 2,380 feet.

Sabine Parish

W. G. Doerne is coring No. 1 Pickering, Section 17-4-11, at 3,948 feet. Plymouth Oil Co.'s No. 2-A Logan, Section 23-10-12, is coring at 4,820 feet.

Tensas Parish

Enochs and others' No. 1 Curry, Section 39-11-12, is shut down at 2,900 feet.

East Texas

Cass County

Davis & Pigg's No. 1 Lambert in the William Lambert Survey, is shut down for orders, total depth 1,952 feet.

Shelby County

Gulf Refining Co. set 6⅝-inch with packer at 1,621 feet and tested about 5 bbls. 41 gravity oil, passed it up and is drilling at 2,172 feet.

Arkansas

Ashley County

Atlantic Oil Producing Co.'s No. 1 Moffatt, Section 28-16-8, is in black shale at 2,480 feet. J. G. Marcum and others' No. 1 DeYampert, Section 5-19-4, is drilling at 1,400 feet.

Calhoun County

Amerada Petroleum Corp. set 503 feet of 12½-inch surface pipe on No. 1 Matlock, Section 10-12-13, and is drilling at 1,380 feet.

Chicot County

Crawford and others are rigging up to resume drilling on No. 1 Cashion, Section 14-18-2w, which has been shut down at 1,550 feet since August 23. Sam Hunter's No. 1 Sawyer, Section 19-18-2w, is drilling at 1,050 feet. The Texas Company's No. 1 Hammond, Section 23-17-2w, is drilling hard rock at 3,268 feet.

Cleveland County

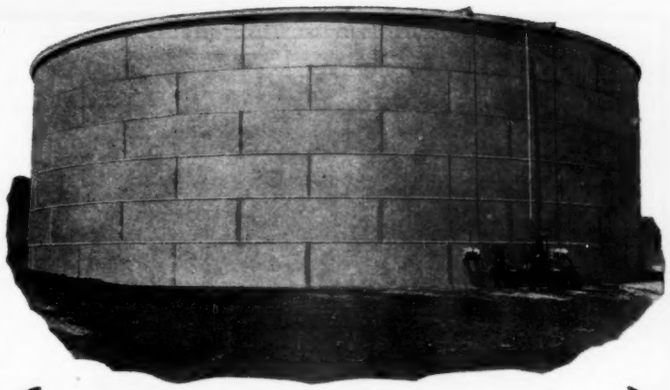
Arkansas Natural Gas Co. topped the Nacatoch at 2,932 feet and is drilling at 3,030 feet in hard shale on No. 1 Tate, Section 4-9-11.

Columbia County

George Dawley's No. 1 Fullenwider & Kitchen, Section 12-17-22, shut down at 2,847 feet for the last month, is reaming to bottom.

Faulkner County

Gold Creek Oil & Gas Co.'s No. 1 Stermer, Section 17-4-13, is drilling green lime at 3,547 feet. Casing record on this wildcat is 12½-inch at 112 feet, 10-inch at 867 feet and 6⅝-inch at 3,198 feet.



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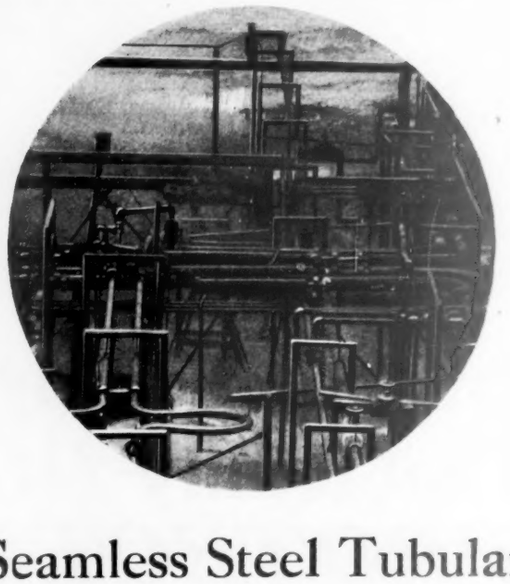

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SEAMLESS STEEL TUBING and PIPE

They claimed an oil show at around this depth but have been shut down, until recently, since early in August.

Logan County

Arkansas Natural Gas Corp. set 8-inch at 2,397 feet on No. 1 Parks, Section 26-8-24, and is fishing for bit at 2,428 feet.

Ouachita County

McDonald Brothers set 82 feet of 12½-inch surface casing and are drilling at 1,212 feet on No. 1 Wilson, Section 25-15-18.

Union County

Champagnolle—Marine Oil Co. is drilling No. 1 Sample, Section 7-17-13, at 2,600 feet. Pure Oil Co.'s No. 1 Gaddy, Section 13-17-14, is shut down at 3,361 feet for repairs to rig. Walber and others' No. 1 Wilson, Section 25-17-14, tested salt water in sand from 3,288-91 feet and is shut down at 3,304 feet.

El Dorado—Tharps Drilling Co.'s No. 1 List, Section 25-17-15, is drilling at 2,782 feet.

Lisbon—Imperial Oil & Gas Products Co. is arranging to whipstock 8-inch casing at 2,100 feet on No. 1 Goodwin, Section 26-17-16, total depth of the hole is 3,387 feet. It was abandoned as a salt water hole at 3,112 feet and failing to test anything below that level, cemented back to 2,800 feet for a test at 3,043 feet but packer gave way and salt water was the result.

Miscellaneous—H. L. Hunt tested salt water at 3,303 feet on No. 1 Dykes, Section 21-18-12, two weeks ago, and is coring at 3,440 feet. E. M. Jones' No. 2-B Stegall, Section 10-18-14, is waiting on standard rig with 100 feet of oil and 25 feet of salt water standing in the hole, total depth 2,265 feet.

Washington County

O'Hara & Shetterly's No. 1 Boyd in SE cor. SE NE, Section 12-16-12, is drilling at 150 feet.

CANADIAN FIELDS

(Continued from Page 53)

the Blairmore-Dakota at 2,840 feet, but will shortly be continued to the Madison.

Biggest Gasser in Field

McLeod Oil Co.'s No. 4, LSD 16, Section 1-20-3w5, which came in some weeks ago at 3,771 feet with a flush wet gas production of 34,500,000 feet a day, is apparently proving somewhat of a disappointment. Official measurement after the well had blown open some time indicated a drop to 20,500,000 feet a day, which still left it the biggest gasser in the field. A production test on the separator with comparatively low back pressure gave between 70 and 80 bbls. of crude naphtha a day. The pressure has since been increased to 350 pounds, and an increase in crude naphtha is looked for. The back pressure will be further increased early in October, as the amount of carbon coming with the crude naphtha diminishes and the well clears itself. Just what it will make under proper conditions will not be known for some weeks; the back pressure will gradually be boosted to 1,000 pounds, but the operators are taking no chances on losing or damaging the well. McLeod's No. 1, same LSD, which is in production at 3,915 feet and has had a lot of trouble with freezing, is showing increasing gas flow, and blowing fragments of metal from the hole, apparently pieces of the lost string of tools. McLeod's No. 3, same LSD, is below 4,510 feet; new hole has been made below a lost string and 6-inch casing is being run.

Spooner Oils' No. 1, LSD 12, Section 13-20-3w5, is at 5,160 feet and drilling, with some further increase in wet gas production. The flow is now around 8,000,000 feet a day. Samples of the formation are reported to show 100 per cent lime content. Spooner's No. 2, Section 24-20-3w5, is drilling at 3,960 feet, after getting the top of the Fernie shales at 3,860 feet. This test got the Home sand, on top of the Fernie shales, at 3,780 feet, 250 feet higher than Spooner's No. 1 and 650 feet higher than Vulcan Oils' No. 1, which indicates that Spooner's No. 2 is likely to get production in the deep lime around 4,350 feet.

Okalta Oils' No. 1, LSD 1, Section 1-20-3w5, is at 4,935 feet, and 15 feet in the deep lime. A control head has been fitted preparatory to drilling into production. Okalta's No. 2, LSD 8, same section, is pumping light crude from the Blairmore-Dakota at 3,000 feet; and Okalta's No. 3, LSD 9, same section, has resumed drilling after cementing casing at 600 feet.

Deepest Test in Field

Calmont Oils, LSD 2, Section 1-20-3w5, has resumed drilling at 5,650 feet after making repairs. This is the deepest test now drilling in the field, and has been drilling past a string of tools lost in the deep lime. It has a fair wet gas show, and is apparently just above the main producing horizon.

British Dominion Oil Development Corp.'s No. 2, LSD 6, Section 12-20-3w5, is drilling at 1,100 feet, with 15¼-inch casing to the bottom of the hole. Sentinel Oil Co., Section 8-20-2w5, is at 4,650 feet and shut down waiting for casing. Model Oils, LSD 8, Section 22-20-3w5, has resumed drilling at 1,170 feet after setting 15½-inch casing. Seneca Oils, LSD 1, Section 34-20-3w5, is drilling near a possible oil horizon in the Dakotas at 4,740 feet. Other tests in the Turner Valley Field may be summarized as follows:

Turner Valley Tests

Test—	LSD	Section	Depth
Advance No. 5	16	19-19-2w5	*2,500
Mayland Oil Co.	10	17-19-2w5	*2,890
Freehold Oil Co.	SW¼	3-21-3w5	*1,600
Illinois-Alberta No. 2	14	12-20-3w5	*3,105
Stockmen No. 2	7	27-20-3w5	†2,400
Big Chief No. 1	3-4	5-20-2w5	‡4,770
Cooper-Nanton No. 1	2	7-20-2w5	‡4,840
Dutch-America No. 1	15	4-19-2w5	‡4,327
Dutch-America No. 2	13	4-19-2w5	‡40
Freman-Lundy	10	1-20-3w5	§...
Great West No. 1	SW¼	7-20-2w5	¶5,376
Highland Oil Co.	5	5-20-2w5	‡3,020
New Black Diamond	1	3-20-3w5	‡1,380
New Valley	4	6-21-2w5	‡2,080
Regent	16	1-20-3w5	*3,000
Vulcan No. 2	11	13-20-3w5	‡4,855

*Drilling. †Casing. ‡Shut down. §Rigged up. ¶Fishing.

Shows of Oil

Near De Winton the Anglesey-Lakeview's No. 1, LSD 1, Section 22-21-1w4, rotary test is drilling at 4,435 feet in a hard formation with lime bands, apparently a cap rock. Gas is bubbling up through the rotary mud, and shows of oil have been encountered, somewhat more pronounced than those in the upper horizons. The oil is a dark brown crude between 26 and 33 gravity.

In the Aldersyde district, Ranchmen's Gas & Oil Co., LSD 16, Section 13-20-29w4, has cemented 8-inch casing at 2,825 feet and is starting to drill through the cement. Just before cementing, the drill met some gas with slight traces of oil.

In the Highwood district, a diamond drill rig is being unloaded for the Imperial Oil, Ltd., Highwood No. 1, LSD 3, Section 36-18-3w5. This test has been standing at 3,624 feet for some months, and is changing to diamond drill in an effort to overcome a crooked hole, due to a fault.

In High River district, High River Oilfields, Ltd., has a location in Section 34-18-29w4 and is moving in derrick timbers and digging cellar. The test is expected to spud in the latter part of October.

In the Lesser Slave Lake district, northern Alberta, International Oils, Inc., of New York is continuing development work. No. 1 well, Section 14-74-4w5, was carried last year to 2,840 feet, and though it failed to get commercial production, the geological information secured, together with encouraging shows of oil and gas, led the company to start No. 2 well on a new location. This test is now nearing the same depth. Additional casing is being shipped to the site. It is reported that a third test will be started this fall.

Irma-Wainwright

In the Irma-Wainwright Field, east central Alberta, Wainwell Oils' No. 2, LSD 15, Section 36-44-7w4, is at 535 feet, and will be completed by contract. The Wainwell refinery will start running in a few days under directions of J. O. Absher; it will handle the production of Wainwell Oils' No. 1 and probably of

other producing wells in the Wainwright Field.

On the Ribstone-Blackfoot structure, eastern Alberta, London-Ribstone Syndicate, LSD 14, Section 10-43-3w4, is recementing the casing before drilling into the standstone at 2,121 feet. Some additional coring is reported to have shown further oil indications below the unsatisfactory sand met at this depth, but the test will likely be drilled to 2,245 feet, where a second oil horizon is looked for. Drilling will resume early in October, after the cement has set.

Saskatchewan

At the present time, drilling activity in Saskatchewan is practically limited to three tests, though several others have been started and are shut down. The most active of these tests is the Rosetown Syndicate's No. 1 Herschel in LSD 13, Section 4-31-17w3, near Herschel. This test is at 1,395 feet.

Near Vera, the Unity Valley Oil Co.'s No. 2, SE Section 23-41-24w3, is drilling at 2,250 feet. At last reports the drill was working in a sandy limestone, and making rapid headway. The location is a mile southwest of Vera station on the C.N.R. and 135 miles by rail from Saskatoon.

In the Simpson district, Simpson Oil & Gas Co., Section 9-29-25w2, is reported down 1,900 feet and drilling, with casing carried down close behind the drill. The drill is still in the Benton shale, with oil and gas showings reported.

To Drill on Bow and Arrow

In Montana, the Kyle-Montana Oils., Inc., a Delaware corporation financed largely by Canadian capital, will drill a test on the Bow and Arrow structure in Township 37n-1e, a few miles south of the international boundary and about 14 miles east of Sweetgrass.

Ontario Fields

In the Ontario fields, the Union Natural Gas Co. has finished No. 291 on the Sheets farm, and No. 292 on the Lethbridge farm in the old Tilbury Field near Port Alma. These tests proved small gassers in the Tilbury sand.

CALIFORNIA FIELDS

(Continued from Page 56)

siderable wildcat exploration work especially during the next few years and, judging by recent leasing activities, several new tests should get under way before the close of 1928.

The development of substantial production by the Barnsdall Oil Co. in the Elwood Field of Santa Barbara County a few months ago has focused the attention of operators on this end of the State and it is quite likely that additional prospecting will get under way shortly. There are quite a number of similar structures located in this locality and many of them warrant conclusive tests, notwithstanding the fact that they have been unfavorably regarded for a number of years. Ventura County will also experience additional prospecting at least during the next year. The Shell and Standard have been engaged in rather extensive surveys and both are expected to continue this work. The Shell has several thousand acres under lease in and around Oxnard where two deep tests are already under way and this area, located about 10 miles southeast of Ventura, will be thoroughly tested out. The company also controls additional acreage around Simi, located about 25 miles east of Oxnard and about 30 miles east of the city of Ventura, where a deep test, No. 2 Berlywood, has been carried down to 7,240 feet. This well, located in Section 32-3-20, showed a small quantity of oil but never resulted in commercial production due to some extent because of considerable water.

The Standard has been concentrating its activities in the Saticoy area, situated about 9 miles east of Ventura, and a deep test, No. 5, is now under way following the drilling of eight structure survey holes drilled for the purpose of determining subsurface conditions. The eight post holes, which formed a rough circle, were located on the Eaton, Ferro, Snyder Van Oni and Saticoy Citrus leases. Four survey holes were drilled on the latter property and No. 5, the deep test, now under way, is located approximately 350 feet from No. 4 Saticoy Citrus and is approximately in the center of this circle of eight structure surveys. The California Eastern Oil Co. has staked location for a new wildcat to be drilled in Section 5-4-17 and road construction is already under way. This new prospect will be drilled approximately 1 800 feet southeast of the Marland Oil Co.'s No. 1 Wickham and George W. Johnston's wildcat, both of which showed oil previous to abandonment because of water trouble. The Continental Oil Co. is also starting a new wildcat in this section of the State and rig construction on its No. 1 Franklin east of Carpenteria will get under way at once.

Southern California Wildcats

Two new wildcats appear in this week's list of prospecting holes in southern California, the most important of which is perhaps John B. Harding's No. 1 in the vicinity of Watts, a few miles from the city of Los Angeles. The importance of this test lies in the fact that extreme gas pressure was encountered around the 400-foot level. The existence of gas in water wells in this general vicinity has been a matter of common knowledge for years but it has never before become unusually troublesome. In Harding's No. 1, however, which is being drilled with a small portable water well rotary, it was necessary to use about 1,500 pounds of hematite. The performance of this well has created unusual interest and while this hole can only be carried down a relatively short distance because of the limited capacity of equipment used, it may develop further showings before drilling is concluded.

The Bastanchury Ranch Co. is credited with the other new well appearing in wildcat reports for the first time and actual spud will be made in the near future. Small production was developed on this property at one time by the Union Oil Co. but the lease was subsequently given up and later acquired by the Standard Oil Co., which company in turn also quit claimed it. The Bastanchury Ranch Co.'s new well, which is located in Section 21-3-10, will probably be carried down as a deep conclusive test as the development of commercial production would greatly enhance the value of this property, notwithstanding the fact that the well is located in the world's largest orange orchard.

Judging by leasing activities during the past 10 days, the next wildcat play in southern California will be located in the vicinity of Maywood, where there is an evident topographic high and some rather favorable geological formations. Ellis Mallory is expected to spud in shortly what may later prove an important test of the possibilities at Manhattan Beach. The significance of this well lies in the fact that it may have a very important bearing on the Lawndale Field, located north of the Torrance and west of the Rosecrans Fields. Mallory's new wildcat is located in Section 30-3-14, approximately a mile southwest of the San Clemente's No. 1 Peck in Section 20-3-14, which opened up the Lawndale Field.

The Continental Oil Co. is rotating ahead at 1,148 feet in its No. 1 McNally, located in the La Mirada district southeast of the Santa Fe Springs Field, and although this area has already cost prospectors several millions of dollars it still holds promise and some one may possibly pick up the much sought after extension of Santa Fe Springs. Northwest of Santa Fe Springs the Associated is making good progress in its Downey wildcat, No. 1 Taylor, in Section 33-2-12, and although no showings of importance have reported down to 3,591 feet several new leases were consummated during the past week. The Shell failed to secure a satisfactory water shutoff in its San Fernando wildcat in Section 4-2-15 and instead of proceeding with the test of a minor showing logged at 4,007 feet drilling has been resumed.

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7⅝x 5⅝	1½ or 2	150
8¼x 5⅛	1½ or 2	160
8¼x 5⅛	2½ or 3	155
8¼x 6¼	1½ or 2	160
8¼x 6¼	2½ or 3	180
8¼x 6⅝	1½ or 2	155
8¼x 6⅝	2½ or 3	190
9⅝x 7⅝	1½ or 2	195
9⅝x 7⅝	2½ or 3	240
10 x 6⅝	1½ or 2	230
10 x 6⅝	2½ or 3	290
10 x 8¼	1½ or 2	200
10 x 8¼	2½ or 3	250
11⅝x 9⅝	1½ or 2	245
11⅝x 9⅝	2½ or 3	320
12½x 8¼	1½ or 2	310
12½x 8¼	2½ or 3	390
12½x10	1½ or 2	250
12½x10	2½ or 3	330
13½x12½	1½ or 2	300
13½x12½	2½ or 3	380
15½x12½	1½ or 2	370
15½x12½	2½ or 3	465
15½x13½	1½ or 2	350
15¼x13½	2½ or 3	440

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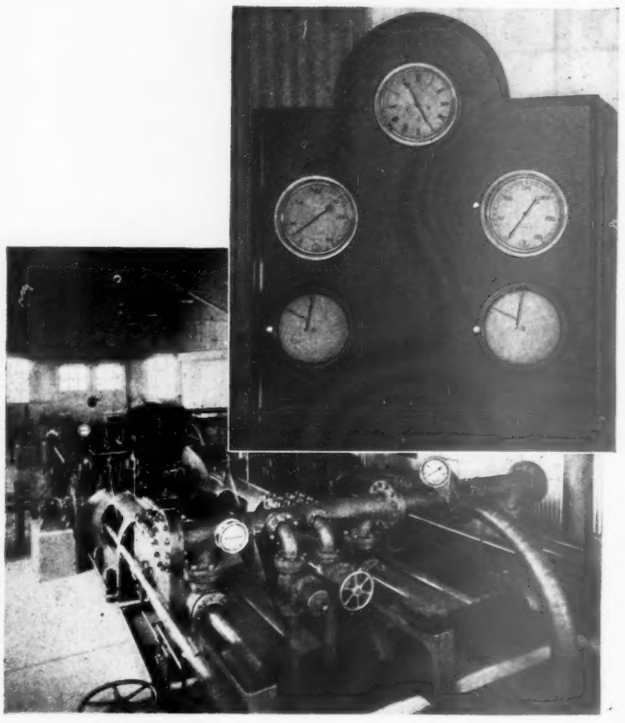

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LOUISIANA-ARKANSAS

(Continued from Page 49)

Lisbon	1,845
Champagnolle	11,935
Bradley	100
Total	84,325
Both States	123,190
Last week	124,065
Decrease	875

NORTH LOUISIANA

Bossier Parish

Elm Grove and Sligo—Arkansas Natural Gas Corp. is rigging up on No. 6-A Van Hoose, 714 feet south and 617 feet west NE cor. NW, Section 31-16-11. C. L. Williams made location 250 feet north and west SE cor. SE NE, Section 32-19-11, for No. 1 McDade and has begun drilling.

Caddo Parish

Hosston—Bayou State Oil Co. set 90 feet of 10-inch and is drilling at 900 feet on No. 33 Hoss, Section 24-22-15.

Oil City—L. M. Emlet is drilling at 2,000 feet on No. 9 Glassell, Section 10-20-15. C. G. Gibbins cored oil sand and is arranging to make a drill stem test at 1,875 feet on No. 1 Gibbins, Section 15-21-16. Magnolia Petroleum Co. is drilling lime at 2,740 feet on No. 3 Levee Board, Section 7-20-15. H. M. Mattson's No. 1 Boisseau, Section 34-21-16, is shut down at 2,000 feet.

Pine Island—Dixie Oil Co. is drilling hard shale at 2,930 feet on No. 91 Dillon, Section 14-21-15; No. 92 Dillon, Section 13-21-15, is in white sand at 5,764 feet. Magnolia Petroleum Co. has made location 660 feet north and 250 feet east of the center of Section 23-21-15 for No. 23 Robertshaw.

Claiborne Parish

Haynesville—Smitherman & McDonald, have rig up for No. 1 Miller, 825 feet south and 660 feet east of the center of Section 17-23-8.

LaSalle Parish

Urania—Randall and others cemented 8-inch at 130 feet and are coring No. 1 Urania, Section 12-10-1e, at 145 feet.

Monroe District

Morehouse Parish—Consolidated Carbon Co.'s No. 2 Perry, Section 14-20-4, cemented 8-inch at 2,156 feet. Natural Gas Producing Co. made location 2,177 feet north and 4,500 feet west SE cor. Section 9-20-4 for No. 1 fee and is drilling at 2,180 feet on No. 11 Tensas Delta, Section 22-22-4. Southern Carbon Co. is drilling at 200 feet on No. 6 Tensas, Section 10-20-4. United Carbon Co. is coring No. 1 Bastrop Pulp & Paper Co., Section 18-21-6, at 3,147 feet.

Ouachita Parish—G. E. Jordan's No. 1 Wall, Section 12-18-3, is in a rock at 2,946 feet. Magnolia Petroleum Co. has derrick up for No. 1 Central Bank, Section 1-19-4, and cemented 10¾-inch second string at 941 feet on No. 2 Millsaps, Section 36-20-4. Natural Gas & Fuel Corp. (Arkansas Natural Gas Corp.) is drilling No. 1 McEnery, Section 2-19-4, at 1,500 feet.

Union Parish—Feazell & Smith cemented 8-inch at 848 feet on No. 1 Steele, Section 16-20-4.

Richland Parish

Community Oil & Gas Co. cemented 835 feet of 8-inch and is drilling at 950 feet on No. 1 Boughton, Section 33-16-6. Sam Hunter cemented 6-inch at 2,331 feet on No. 3-B McCoy, Section 21-16-6, Magnolia Petroleum Co.'s No. 1 McCoy in Section 29-16-6 is a derrick and No. 1 Sartor in Section 16-16-6, is drilling at 1,429 feet. Richland Operating Co. tested dry at 2,400 feet on No. 1 Rhymes, Section 24-16-5, and is drilling at 2,425 feet.

Webster Parish

Cotton Valley—Humble Oil & Refining Co. is drilling sandy lime at 5,033 feet on No. 2-A Bodcaw, Section 14-21-10. Magnolia Petroleum Co.'s No. 5 Cox, Section 15-21-10, tested salt water at 4,800 feet and is plugging back to around 4,600 feet where it tested 5 bbls. oil. No. 5 Merritt, Section 14-21-10, started flowing by heads, about 7 bbls. to each head, when bailed down almost to the bottom, total depth 4,645 feet. Ohio Oil Co. is arranging for a drill stem test on No. 5 Holloway, Section 23-21-10, at 4,712 feet. Palmer Corp. is drilling anhydrite at 4,618 feet on No. 3 Tillman, Section 28-21-10, after testing about 2,000,000 feet of gas at 4,554 feet. Superior Oil Co. has derrick up for No. 1 McCook & Hibbler, 660 feet north and west SE cor. Section 21-21-10.

Sarepta and Shongaloo—Jones and others' No. 1 Elkins, 200 feet north and east SW cor. SW NW, Section 33-23-9, has set 427 feet of 10-inch surface casing and is drilling at 500 feet. Magnolia Petroleum Co.'s No. 1 Lewis, Section 25-23-10, is in shale at 2,940 feet; No. 1 R. J. Munn, Section 29-23-9, tested 2,000,000 feet of gas at 2,690 feet and is making a few feet more hole. No. 1 Oakes-Roseberry, Section 29-23-9, cemented 8⅛-inch casing at 2,730 feet. Northwest Louisiana Gas Co.'s No. 7 Pine Woods, Section 33-23-11, is waiting on standard rig to pump after it refused to flow through tubing, total depth 3,041 feet.

EAST TEXAS

Harrison County

Nick Barbare cemented 6-inch at 2,302 feet on No. 5 Furrh in the James Short Survey. McRitchie and others made location for No. 1 Baldwin, 3,057 feet west and 1,389 feet south NE cor. Mrs. A. C. Baldwin tract in the E. M. Fuller Survey. Tylong Oil & Gas Co. has moved back on No. 1 Abney and cemented 6-inch at 2,307 feet. The well, drilled by E. R. Ratcliffe and associates some time ago, was a dry hole.

Panola County

Magnolia Petroleum Co. made a drill stem test of 14 feet of sand at 990 feet on No. 2 Lula Fletcher in the B. C. Jordan Survey, got salt water and shut down for orders. Natural Gas Products Co. has derrick up for No. 7 Roquemore, 6,904 feet south and 7,947 feet east NW cor. B. C. Jordan Survey. C. W. White is drilling at 970 feet on No. 1 Robinson, 2,284 feet south and 4,972 feet west NE cor. James Mathews Survey.

ARKANSAS

Johnson County

Arkansas Natural Gas Corp. is drilling at 2,836 feet in sand in No. 1 Bynum, Section 13-10-24; No. 1 Houston, Section 15-10-24, is in shale at 1,250 feet; No. 1 O. L. Hudson, Section 14-10-24, is on sand at 1,715 feet and No. 1 Kerwin, Section 16-10-24, is underreaming 5⅞-inch casing cemented at 3,210 feet.

Nevada County

Autrey Oil Co. took 5 feet of sand in No. 1 Haynie, Section 6-14-20, and is waiting on standard rig, total depth 1,206 feet. Humble Oil & Refining Co.'s No. 5-A Groves, Section 1-14-21, set 42 feet of 10-inch and is drilling at 1,000 feet; No. 6-A Groves in the same section is waiting on standard rig to pump from 2 feet of sand, total depth 1,105 feet.

Union County

Champagnolle—O. W. Estes' No. 5 Rowland, Section 14-17-14, was dry at 3,067-87 feet and is reaming to bottom, total depth 3,087 feet; No. 6 set 64 feet of 10-inch and is drilling at 300 feet. Lion Oil Refining Co. is rigging up on No. 4 Nash, a new well in the SW cor. NE SW Section 6-17-13; No. 5 Rowland, Section 15-17-14, is standing 1,500 feet in fluid, total depth 3,207 feet. Magnolia Petroleum Co. is coring No. 2 Carroll, Section 1-17-14, at 2,996 feet; No. 5 is waiting on standard rig with 1,500 feet of fluid in the hole from 23 feet of broken sand, total depth 3,018 feet; No. 6 cemented 6⅝-inch at 2,951 feet, total depth 2,968 feet; No. 2 G. C. Dumas is a derrick in the SE cor. SW NE, Section 11-17-14. C. E. Murdock cemented 6⅝-inch at 2,985 feet on No. 1 Union Sawmill, Section 6-17-13, total depth 2,995 feet.

Ohio Oil Co. is drilling No. 4 Crain, Section 1-17-14, at 2,315 feet; No. 8 cemented 6⅝-inch at 2,986 feet; No. 1 Nash, Section 6-17-13, is coring at 2,982 feet; No. 1 Townsend, Section 10-17-14, is drilling at 2,680 feet and No. 1 Ward, Section 14-17-14, has rig up. Oilwell Corp. has made location in the NE cor. NW SE Section 9-17-14, for No. 1-A Kelly. Rovenger Oil Corp. cemented 6⅝-inch at 3,225 feet on No. 4-A Perdue, Section 10-17-14, and is swabbing to test 24 feet of broken sand, total depth 3,249 feet.

Smackover—Simmons and others' No. 1 Green, Section 3-16-16, is reaming for a drill stem test of 5 feet of sand, total depth 2,333 feet.

SOUTHWEST TEXAS

(Continued from Page 46)

Survey 753, Block 14, Magnolia-Cole Field, at 2,339 feet is making 100 bbls.

Sun Oil Co.'s No. 3-A Yeager-Strohman, Share 5, Albercas Field, completed at 2,180 feet made 900 bbls. the first 24 hours and then sanded up and is now running tubing.

O. W. Killam's No. 23 Bruni, Block 64, Albercas Field, completed at 2,187 feet is a 100-bbl. well.

Zapata County

O. W. Killam's No. 2 Cuellar, Jennings Field and southwest of No. 1, the discovery oil well completed at 1,466 feet made 10,000,000 feet of gas and is spraying oil.

ABANDONED TESTS

Bastrop County

J. F. Miller Drilling Co.'s No. 1 Ed Jones, has been abandoned dry at 2,207 feet in the base of the chalk.

Rundus & Landua's No. 1 Rundus, William Medford Survey, 12 miles southwest of Smithville, is dry and abandoned at 723 feet.

Medina County

J. A. Tarver and others' No. 1 Adams, Survey 12, 1½ miles south of the Adams gas field, at 1,100 feet showed salt water and has been plugged and abandoned.

Webb County

Magnolia Petroleum Co.'s No. 7 Bruni (Killam-Simms), Block 65, Albercas Field, a location, has been abandoned.

NEW LOCATIONS

Bexar County

Humble Oil & Refining Co.'s No. D. & A. Oppenheimer, 450 feet east of Pleasanton road and 750 feet to south line of tract, in shallow Alta Vista Field, has derrick up and is moving in machinery for a deep test.

Caldwell County

M. W. Koening's No. 7 Tiller, John Henry Survey, Luling Field, is location 300 feet east of No. 6.

Bartlett Brothers' No. 1 C. N. Martindale, William G. Steffey Survey, 490 feet to northeast lines and 972 feet to northwest lines has derrick up.

Duval County

Humble Oil & Refining Co.-Reiter-Foster's No. 10 Koehler, Humble-Reiter-Foster Field. Survey 166, is location 165 feet to east line and 1,605 feet to south line.

Webb County

Aviator Gas Co.'s No. 1 E. Garcia, Survey 606, Block 11, Mid-Ojuelos Field, is location 150 feet to south and east lines.

Suladie & Mimms' No. 1 Puig, Puig (Kirkpatrick)) 160-acre tract is location 450 feet to east lines and 155 feet to north lines and is in the Aviator Field.

O. W. Killam's No. 25 Bruni, Block 64, Albercas Field, is erecting derrick.

Magnolia Petroleum Co.'s No. 11 Yeager-Strohman is making location in the Albercas Field.

Magnolia Petroleum Co.'s No. 12 Yeager-Strohman, Share 5, Albercas Field, 992 feet to south line and 200 feet to east line, is rigging up.

Baku Oil Co.'s No. 1 A. M. Bruni, Survey 735, Block 7, is location 310 feet to north line and 150 feet to east line.

Magnolia Petroleum Co.'s No. 10 Valdez, Survey 754, Block 16, Magnolia-Cole Field, is location 150 feet to south line and 1,150 feet to west line.

Houston Oil Co.'s No. 15-D Benavides, Survey 753, Block 12, is location 662 feet to south line and 160 feet to west line. No. 16-D Benavides, Survey 753, Block 12, is location 160 feet to north and west lines. No. 17-D Benavides, Survey 753, Block 5, is location 160 feet to south and west lines. No. 18-D Benavides, Survey 753, Block 6, is location 160 feet to south and east lines.

Cole Gas Field—Duval

O'Hern & Seacord's No. 6 Benavides, Survey 172, located 3,125 feet to north and west lines, has been spudded in.

Schoolfield-O'Byrne Pool

Magnolia Petroleum Co.'s No. B-1 C. W. Hahl, Survey 61, located 3,081 feet to east line and 150 feet to south line, is rigging up. Sun Oil Co.'s No. 1 W. P. Norton, Survey 250, located 150 feet to south and east lines of lease, is moving in machinery; No. 1 Henne-Winch, Survey 250, located 150 feet to south and west lines of lease and east offset to discovery well, is moving in machinery. W. L. Pearson & Co.'s No. 1 Bowe, Survey 250, Block 21, is location 150 feet to north and east lines; No. 1 Krauter, Survey 250, Block 20, located 150 feet to north and east lines, has derrick up.

Simms Field

Rio Grande Development Co.'s No. 1 Dinn, Survey 454, located 960 feet to north line and 150 feet to the west line, is standing at 80 feet.

Humble-Reiter-Foster Field

Humble Oil & Refining Co.'s (Reiter-Foster) No. 9 Kohler, Survey 164, located 1,155 feet to the west line and 135 feet to the south line, is drilling at 1,860 feet.

Randado Field—Jim Hogg

Magnolia Petroleum Co.'s No. 40 Merchants State Bank, Survey 415, is location 3,150 feet to west line and 200 feet to the south line; No. 21 de la Garza, Survey 291, Block 10, located 175 feet to west line and 350 feet to north line, has been spudded in. T. J. Conway's No. 1 Palacious, Survey 232, Block 5, is making location.

Alworth Field

Alworth-Stevens-Hild's No. 13 M. Garza, Survey 39, Block 9, is location 270 feet to northwest lines and 630 feet to northeast lines.

Reiser Pool—Webb

Marts & Beavins' No. 1 Johnson, Survey 1,617, Block —, is drilling at 200 feet. R. C. Holsworth's No. 1 Wheatley, Survey 1,569, Block 3, located 847 to north line and 305 feet to east line, is testing at 1,442 feet.

Albercas Field

O. W. Killam's No. 23 Bruni, Block 64, located 1,000 feet to west line and 1,050 feet to south line, has sand at 2,184-87 feet and has set casing at 2,184 feet; No. 24 Bruni, Block 64, is moving on. Magnolia Petroleum Co.'s No. 10 Yeager-Stroham, Share 5, located 450 feet to south line and 150 feet to east line, is location; No. 7 Bruni (Killam-Simms), Block 65, located 1,200 feet to east lines and 1,170 feet to south line, has derrick up. Rycade Oil Corp.'s No. 1 Yeager-Strohman, Share 5, located 150 feet to north and east lines of Rycade's 633-acre lease, is drilling at 1,980 feet. Sun Oil Co.'s No. A-3 Yeager-Strohman, Share 5, located 550 feet to north line and 200 feet to west line, has sand at 2,169-80 feet and has set casing at 2,164 feet; No. A-4 Yeager-Strohman, Share 5, located 2,878 feet to north line and 150 feet to west line, is drilling at 100 feet after setting 10-inch casing at 22 feet; No. A-5 Yeager-Strohman, Share 5, located 1,514 feet to north line and 150 feet to west line, is location; No. A-6 Yeager-Strohman, Share 5, is location 1,214 feet to north line and 150 feet to west line. William R. Jewell's No. 3 Bruni, Block 56, located 700 feet to east line and 165 feet to north line, is drilling at 980 feet.

Aviator Field

G. C. Salley's No. 1 Puig, Carter-Pinkton tract of Puig ranch, Albercas grant, 200 feet to west line and 150 feet to south line, is rigging up.

Carolina-Texas Field

Usher Carson's No. D-5 Webster, NW SE Survey 684, located 150 feet to the north and west lines, is coring at 2,136 feet after coring sand at 1,409-25 feet, showing little gas. C. R. Miller's No. 1 de la Garza, Survey 48, Block 47, located 150 feet to the north and east lines, is drilling at 600 feet.

Andrews Field

Gleason Oil Co.'s No. 2 Benavides, Survey 11, Block 11, located 300 feet to northwest lines and 250 feet to northeast lines, is standing at 1,000 feet, due to water shortage.

Magnolia—Cole Pool

Cole Petroleum Co.'s No. 65 Benavides, Survey 412, Block 4, located 1,060 feet to west line and 160 feet to north lines, has derrick up. Houston Oil Co.'s No. D-4 Benavides, Survey 753, Block 13, is location 160 feet to south line and 822 feet to east line; No. D-5 Benavides,

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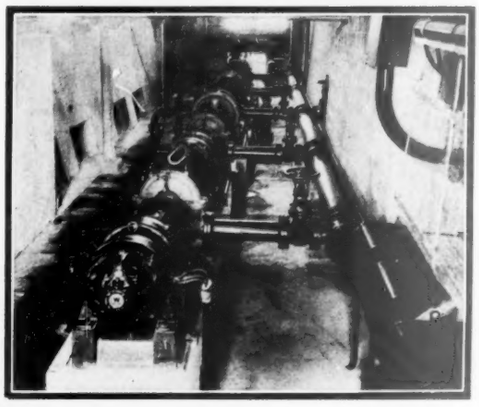

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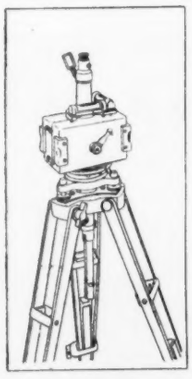

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Survey 753, Block 13, is location 160 feet to south and west lines; No. D-13 Benavides, Survey 753, Block 12, located 334 feet to south line and 150 feet to east line, has sand at 2,326-30 feet and has set casing; No. D-14 Benavides, Survey 753, Block 13, located 662 feet to south line and 160 feet to west line, is drilling at 1,875 feet. Houston Oil Co. and others' No. F-1 Benavides, Survey 753, Block 14, is location 160 feet to south and east lines; No. F-3 Benavides, Survey 753, Block 14, located 663 feet to south line and 160 feet to east line, has sand at 2,327-30 feet and set casing. Magnolia Petroleum Co.'s No. 7 Valdez, Survey 754, located 150 feet to south line and 750 feet to west line, has sand at 2,317 feet and is setting casing.

Jennings Field—Zapata

O. W. Killam's No. 2 Cuellar, southwest of No. 1, at 1,454 feet has set casing to test sand; No. 3 Cuellar, northwest of No. 1, is drilling at 1,200 feet.

Roxana-Larremore Field—Caldwell

Roxana Petroleum Corp.'s No. A-4 A. W. Jolly, Cornelius Crenshaw Survey, 450 feet to north line and 150 feet to east line, is testing at 1,314 feet; No. 5 A. W. Jolly, same survey, 300 feet southeast of No. 3, is location; No. 1 Wilms, same survey, 150 feet to north and west lines, is location.

Dale Field

Adam and others' No. 3 Moore has set and cemented casing at 2,090 feet. The Texas Company's No. 3 Moore, J. Gilbert Survey, is location 450 feet to northeast lines and 150 feet to southeast lines.

Luling Field

Magnolia Petroleum Co.'s No. B-1 A. J. Brown estate, John Henry Survey, 418 feet to northwest lines and 32 feet to southwest lines, is rigging up; No. 4 McKinney, 300 feet northwest of No. 1, is drilling at 2,012 feet; No. 21 R. Rios, John Henry Survey, 150 feet to northwest lines, is drilling at 2,235 feet; No. 22 R. Rios, John Henry Survey, is drilling at 530 feet.

Joe Bruner Pool

Pat Armstrong's No. 1 E. A. Martin, A. Floyd Survey, is drilling at 1,800 feet. Carl Brothers & Suttle's No. 1 C. W. Malone, A. Floyd Survey, 150 feet to northwest and northeast lines, at 2,327 feet has reamed down 2,200 feet to set casing, and is having trouble with boulders. De-Tex Oil Co.'s No. 1 M. August, A. Floyd Survey, 150 feet to northeast and southeast lines, at 2,550 feet is bailing and swabbing a little oil. Golden West Oil Co.'s No. 1 Cook, A. Floyd Survey, has derrick timbers on the ground; No. 3 Wilson, A. Floyd Survey, 450 feet to northwest lines and 150 feet to southwest lines, is setting liner at 2,505 feet. T. C. Hadley's No. 1 Tiller, Gerren Hinds Survey, about one-fourth mile west of No. 1 Heise, at 2,621 feet shot from 2,400-2,621 feet with 150 quarts, 21 feet in the Eagleford and is cleaning out. M. S. Holladay's No. 1 Bouldin is drilling at 1,850 feet. Larsen-Walsh's No. 1 Fred Wilson, Solomon Seal Survey, 150 feet to northeast and southeast lines, is rigging up. Luling Oil & Gas Co.'s No. 3 Carter, Gerren Hinds Survey, 300 feet north of No. 1, is drilling at 2,370 feet. Lu-Tex Oil, Inc., No. 2 Wilson, A. Floyd Survey, 150 feet to northwest and northeast lines, is setting casing at 2,290 feet. Radiant Oil Co.'s No. 1 E. L. Mayton, Hector McNeil Survey, is center of survey, is laying water line. Sun Oil Co.'s No. 1 R. W. Malone, A. Floyd Survey, is drilling at 2,483 feet.

Lockhart Area

The Texas Company's No. B-1 F. M. Branyon, John R. Miller Survey, 150 feet to north line and 239 feet to west line, is moving in machinery.

Luling Field—Guadalupe

A. B. A. Oil Co.'s No. 4 Britton Harris, 300 feet to east line and 190 feet to south line of Britton Harris tract, is drilling at 1,250 feet. Magnolia Petroleum Co.'s No. 1 H. A. Cartier, Harriett Cottle Survey, 150 feet to northwest and northeast lines, is drilling at 1,708 feet.

Kingsville Field—Kleberg

Humble Oil & Refining Co.'s No. B-4 Dennett, Section 38, Lot 19, located between Nos. B-1 and B-3, is location; No. 4 Flato, Section 40, Lot 10, located 250 feet to east line and 450 feet to north line, is ready to spud in.

Three Rivers Pool—Live Oak

J. A. Harper's No. 3 Three Rivers Co., 300 feet southwest of No. 1, set casing at 660 feet after testing gas on drill stem test. J. W. Walton's No. 3 C. H. Wedding, 300 feet west of No. 1, is coring sand at 1,578 feet.

Adams Field—Medina

Southern Gas Utilities' No. 21 Adams, Durst Survey No. 13, located 150 feet to west line and 476½ feet to south line of Block 10 of Adams Subdivision, is location.

Refugio County

Houston Oil Co.'s No. 4 Rooke is milling out through casing at 1,232; No. 2 Wilson Heard is drilling at 1,287 feet; No. 8 Rook is drilling at 3,365 feet. Houston Gulf Gas Co.'s No. A-2 Wilson Heard, is drilling at 3,600 feet; No. 3 J. M. O'Brien is down 3,400 feet. Pat Rutherford & W. L. Pearson's No. 1 J. M. O'Brien is drilling at 2,500 feet. Sun Oil Co.'s No. 1 John Buckley is drilling at 1,500 feet. Saxet Gas Co.'s No. 4 Claude Heard is at 3,688 feet drilled 2 feet in sand, looks like gas well and is setting tubing. Texas Gas Co.'s No. 2 Claude Heard, 300 feet west of the discovery well, has been sold to Benedum-Trees along with discovery well and acreage. Texas Gas Co.'s No. 1 Holmes Heard, northern end of the field, is down 1,100 feet.

White Point—San Patricio

Saxet Oil Co.'s No. 1 State is location; No. 16 White Point Gas Co., Rachall Survey, SW cor., is milling out at 1,800 feet, total depth 2,180 feet. W. L. Pearson's No. 1 Mitchell is to be deepened from 2,400 feet.

West Field—Zavala

Tritex Oil Corp.'s No. 3 West, M. Suniga Survey No. 44, located 4,800 feet to west line and 900 feet to south line, at 800 feet is drilling in, estimated at 12,000,000 feet of gas. Mirando Gas Co.'s (formerly carried as Witherspoon Oil Co.) No. 3 West, J. Fuenta Survey No. 43, located 2,600 feet east of No. 1, is drilling at 1,000 feet.

GULF COAST FIELDS

(Continued from Page 98)

trict, this being No. 1 Brune, John Gillespie Survey, 3 miles northeast of Columbus. Humble Oil & Refining Co.'s No. 1 Byers, south of Altair, is in shale at 851 feet.

Fort Bend County — Gulf Production Co.'s No. 9 Trone, Long Point, is drilling gumbo, lime and shale at 3,032 feet. No. 11 Wolf, same dome, as the week closed, was bailing to test hard sand at 712 feet. West and associates have made location for No. 1 Hartfield, near Needville.

Galveston County — Long and associates' No. 1 Irwin & Bishop is standing in gumbo at 2,680 feet.

Grimes County—J. G. Pundt's No. 3 Cuthrell, P. B. O'Connor Survey, is standing. It bailed salt water with only a slight showing of oil from sand at 2,795 feet.

Harris County—Humble Oil & Refining Co.'s No. 4 Warren, at Hockley, is drilling sand and shale at 4,477 feet. Baldwin and associates' No. 1 Kitzman, near Cypress, is drilling gumbo at 2,310 feet. Cedar Bayou Oil Co.'s No. 1 Johnson, 8 miles north of Goose Creek, is shut down temporarily for rig repairs. It is at a total depth of 3,015 feet. Humble Oil & Refining Co.'s No. 1 Minnetex, Mykawa, is drilling sand and shale at 3,063 feet. Torsen and associates' No. 1 Stewart, southwest of Genoa, is standing waiting the drilling of a water well. Others in the county are unchanged.

Jackson County—The Texas Company's No. 1 Moore, 16½ miles north of Edna, D.&G.N. Survey, is drilling shale at 2,195 feet. Wright & Douglas' No. 1 Lawrence, John McHenry Survey, 12 miles northwest of Edna, is drilling hard sand and shale at 2,662 feet. Wright Brothers' No. 7-A Drushell is drilling

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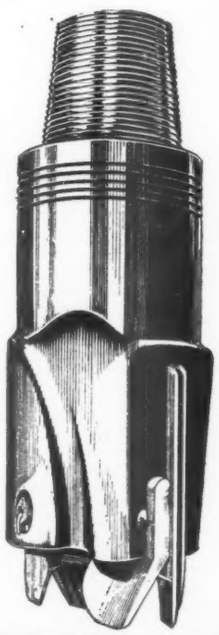

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gumbo below 1,305 feet. Their No. 2 Classen is in gumbo at 2,154 feet.

Jasper County—Great Lake Oil & Gas Syndicate's No. 2 Boykin, B.B.B.&C. Survey, in the extreme northwestern corner of the county, was bailed in late in the week making considerable volume of fluid of which a small amount was oil. This is from a sand at 1,278 feet and approximately the same depth as found in a similar completion by this company several months ago in No. 1 Boykin, 600 feet southeast. Tar Well Oil Co.'s No. 1 Nona Mills, in the same district, is standing.

Jefferson County — Gulf Production Co.'s No. 2 Burrell, Fannette Dome, is drilling in gumbo below 734 feet after setting a string of 10-inch casing there.

Liberty County—Humble Oil & Refining Co.'s No. 3 Sterling, Moss Bluff Dome, is rigged up and ready to start drilling. Sun Oil Co.'s No. 1 Kyle, same dome, at latest reports was drilling in shale below 2,223 feet.

Matagorda County—Griffith and associates' No. 1 Culver, near Citrus Grove, is drilling shale and lime at 3,069 feet.

Walker County—Davis and associates' No. 1 Gibbs, Charles Stewart Survey, is drilling sticky shale at 3,310 feet.

Washington County — Sun Oil Co.'s No. 1 Grote, Somerville district, cored an oil showing sand at 1,043-52 feet. Lyne and associates' No. 1 Hess, at Brenham, is in sand at 1,178 feet.

Wharton County—Abercrombie and associates' No. 2 Croom has been abandoned at 1,120 feet. The test, which has been abandoned since last March, was taken over several weeks ago from Nails and associates.

South Louisiana

Acadia Parish — Gulf Refining Co.'s No. 1 Housierre-Latrielle, on the Egan Dome prospect, is drilling gumbo at 3,340 feet.

Cameron Parish—Louisiana Land & Exploration Co.'s No. 3-B Calcasieu Lake, in the Hackberry district, has been spudded in. Roxana Petroleum Corp.'s No. Watkins, Black Bayou, is drilling plug to test an oil showing sand at 1,089 feet. No. 4 Watkins is in blue gumbo at 1,535 feet.

Iberia Parish—Louisiana Land & Exploration Co.'s No. 2 Averys Island, is drilling gumbo at 3,595 feet.

Iberville Parish — Roxana Petroleum Corp.'s No. 2 Wilbert, White Castle Dome, was bailing down at the close of the week. It was showing salt and sulphur water with a slight trace of oil.

LaFourche Parish—Gulf Refining Co.'s No. 6 Stark, at Thibodaux (Lutcher), is drilling sticky shale at 1,623 feet.

TEXAS PIPE LINE CO. PURCHASES AIRPLANE

HOUSTON, Tex., Oct. 1—The Texas Pipe Line Co. has announced the purchase of a Wright Whirlwind motor airplane to be used as a general utility plane for the company. The plane, to be known as the Texaco No. 2, will have as its pilot Matt Nieminen, who has been in commercial air service since the war and for the past two years has been flying air mail in Alaska.

This is the second plane to be put in service by The Texas Companies, the Texaco No. 1 being in service by the sales department of The Texas Company.

For sometime officials of The Texas Company and the Texas Pipe Line Co. have been using the air to facilitate their travel to and from their various offices and field. This second plane is for the specific use of the pipe line department which at this time is engaged in an extensive building program necessitating quick transportation of the officials from one part of the State to the other.

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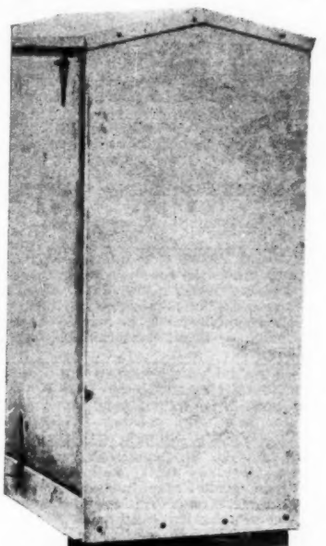

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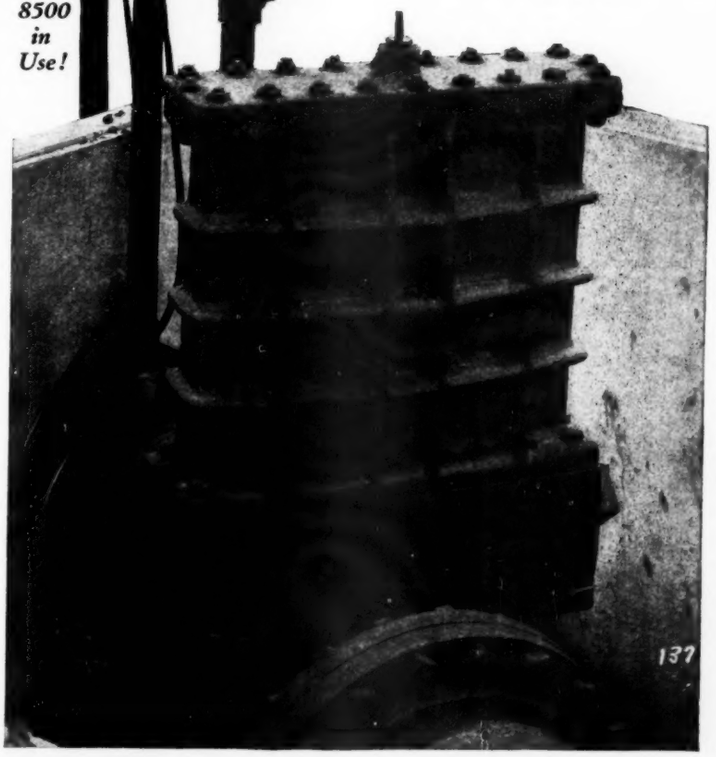

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Steady Movement in Chicago Market

Contract Buyers Taking Supplies Freely but Spot Business Is Light. Reports of Shading Prices on Small Volumes

By J. B. Waldo

CHICAGO, Oct. 1.—There was a steady movement of the major petroleum products at the opening of the week although the market was not very active as to new business. Refiners state that the contract buyers are taking out supplies freely while their spot business is light to fair according to the company. Much of the buying in the spot market is going direct to refiners or marketers who are shading prices to secure it and the larger companies are not meeting these lower quotations. Some of the smaller Group 3 plants are still selling to marketers for resale and direct to the large distributors at 9¼ to 9⅜ cents. Gasoline out of West Texas is also being offered here quite freely but much of this is admitted to have some odor. The larger refiners are holding to 9¾ cents for U. S. Motor gasoline and claim that the total volume at less price is only sufficient to care for a small part of the needs of this territory. One near-by refinery is offering today at 9¼ cents and is quite frequently referred to but its output is only a couple of cars daily.

There was little change in the demand for the higher grvaities and the same condition prevailed as to prices as in the Motor grade. It is a mixed situation with the larger refiners doing practically all contract business and the other interests getting a good share of the spot sales.

Kerosene Easy

Kerosene was in light demand and the market was easy with quotation made for immediate acceptance as low as 6 cents for the 41-43 gravity. Distillates were in fair demand and the price was firm with some advances of one-eighth cent, the 38-40 gravity being held tor 3¼ cents or better.

Gas Oils Firm

Gas oils were firm with the straw zero in demand and hard to buy. Some few quotations were made to large buyers on straightrun gas oil of 2¾ cents although most refiners were holding for 2½ cents. Some of the first of the month fuel oil business had not been closed at the opening of the week and there were a number of good inquiries in this market on Monday. The prices of the low sulphur grades were strongly held, even higher prices being asked for the higher gravities with a low cold test. There was no noticeable improvement in the heavy fuel oils. Many large buyers have had quotations of 60 cents a barrel over the year made them and while some contracts have been closed others are still hanging fire. The new Q.D.A. became effective this morning but it is too early to note results. A number of dealers who had not accepted the new contracts offered them were stated to be signing today.

Last week was the final period of the old Q.D.A. with its more liberal terms. There was a great deal of muttering, even of injunction proceedings. A large number of consumers of considerable quantities of gasoline wi l no longer receive a discount on their station purchases. A larger number of resellers will be obliged to operate on a narrower margin if they con'inue business. The chief complaint regarding the new discounts has come from this class. Some claim that what was an established business at which they could at best only make a living, under the new conditions cannot be operated at a profit. They wi l have to retire from business, they claim, if they are unable to find some concern that will sell them on the old basis. One of the tactics employed to secure another source of supply is to claim they had found it possible to make terms with some refiner or tank car distributor who would fill their orders on substantia'ly the same old discounts. There is very little likelihood that any substantial number of these small resellers will be able to make such connections.

The major distributing companies in this terri ory are as one in asserting that the terms of the new scale will be strictly enforced. During last week a number of cases of violation of such parts of the scale as were in force were penalized by the discharge of employes or the canceling of contracts with customers proven to be in the wrong. A very good suggestion right now while the new conditinos are being tried out is not to believe every rumor or report of a violation of the terms of the new Q.D.A. The actual facts should be secured and if a violation of the sca'e is shown in the shape of price reductions or of unauthorized concessions seek to have the condition corrected and do not attempt a retaliation by committing the same offense. The best way to correct such conditions is to take up the mat ter with the offender himself. It may be the result of some mistake or misunderstanding. If this does not bring about a correction of conditions take the proofs to the headquarters of some one of the major companies operating in that section. If the cut price or violation is made by an employe of one of the major companies go right to the heads of that company with the proof.

To E'iminate Abuses

The bulk of the established oil men in this territory believe the new Q.D.A. will eliminate many practices costly to the industry as a whole. Many of them have been consulted and their views and suggestions seriously considered in the formulation of the new scale of quantity discounts. The final scale is a compromise but these oil men believe is the best that could be devised under existing conditions. They want it to have a fair trial. The present average spread between the delivered cost of U. S. Motor gasoline and the tank wagon price is around 3 cents. Under the various forms of marginal contracts in force the distribu or who buys on a contract in tank car lots will have a guarantee of 4½ to 3½ cents with a constant tendency at present to substitute the lower for the higher margin as the old contracts are renewed. So long as the spot refinery market price is maintained there can be little price cutting. Most of the price cutters will be merely starting a "going out of business sale," although they may not realize it. The success of the movement to put the industry on a stable basis must be due in the long run to the holding by refiners to the policy of refining only as much gasoline as they know they can sell at a profit. This will put an end to 6-cent gasoline at the plant. It was the low price for good gasoline that made the growth of the raiders of the industry so rapid and finally took the profit out of all branches.

The gasoline demand last week was good from the standpoint of the refiner selling his output largely on contracts. There was also considerable spot business, many of these orders sma l and wanted in a hurry. Jobbers have been steadily reducing their stocks and now many find themselves short of material. Some of the largest have very small supplies in comparison with the volume of their gasoline sales. In one case a large dealer with unusually liberal storage facilities in calling up his source of supplies to ask that a shipment of 10 cars be hastened stated that while his stations were supplied for a few days his bulk storage was down to about 3,000 gallons or practically nothing for his business. This may have been a rather exceptional case and was in part due to the delay in shipping. Many refiners are sti l a little slow on deliveries and one large organization is about 300 cars behind which is one-half what it was behind in August. So far this month the Mid-Continent refineries have just about shipped all the gasoline they have run, stocks showing little if any increase. Several refiners have stated they would prefer to have a little more gasoline in stock but their sales and shipments to their own stations had made this impossible. As a rule stocks do increase from October but this year the refiners will not accumulate excessive supplies. They plan to replace what they ship and as the movement increases or decreases their runs will be quickly adjusted to the demand.

Growth of Contracts

The bulk of the gasoline sales last week were on contracts and some of the sales offices have commented on the dropping off in the spot orders coming to them as the quantity of contract business has increased. Some sales managers state that of the distributors who have habitually bought in the spot market, 75 per cent have signed contracts. This may be an excessive proportion but a great many dealers have newly joined the number of those who buy their gasoline and other material on contract. The new contracts are being signed because there is nothing else to do, but they are not relished by dealers who have had or have heard of others having contracts with much larger margins and more elastic terms. But the contracts are being brought in line with the new Q.D.A., both showing the tendency to narrowing margins of profit. Refiners have stated that 3½ cents was sufficient for the dealer to operate and make a profit. Years back it was pointed out again and again that the continuance of the excessive profits to the distributor would result in a reduction of his sources of supply as it would almost force the refiner to establish his own outlets. Refiners have done this until it is difficult to name any number of important refining organizations who do not have their own stations and distribute a greater or less share of their output through these stations. With an assured outlet through stations and an additional quantity through stations controlled by exclusive contracts the refiner is very indifferent to the spot trade unless he can secure a higher price than he does by selling through his other outlets. Recently a number of large distributors agreed on this statement that if a buyer wanted a small quantity of gasoline he might by picking up a car here and there do better than the regular market, but that if he wanted a quantity he would have to pay the market price.

Last week the market gained in strength. The large refiners were holding firmly at 9¾ cents for U. S. Motor gasoline. Some supplies were available at 9½ cents to the trade and occasionally at less but there was no great quantity to be had from any one source, the sellers being generally small refiners and marketers. Some of this lower priced gasoline came from North and West Texas. Some of it was sweet and desirable but much was not. One refiner experimented with 50 cars for his own stations in the more distant parts of his territory. When the cars reached their destination there was an immediate protest from the station managers who claimed that the gasoline would injure or kill their trade. Every car was rejected. Of course there is a lot of very good gasoline coming from North Texas and some good gasoline has been refined and delivered by the West Texas plants. Good sweet gasoline meeting the doctor and corrosion tests and conforming to specifications can be run from the crudes available to the West Texas refineries but the additional treatment required adds to the expense of refining and it cannot be sold at the "bargain counter" prices at which some of this product has been offered. Some was sold during the August shortage to dealers who bought it because they had to have something that would run a car, but many a dealer has had an experience as the result of filling his customers' tanks with the sour gasoline that makes him shy of this product. Some unjustly condemn all gasoline from West Texas crudes not realizing that some large refiners are operating on that crude and producing a satisfying motor fuel. But this attitude of the dealer has tended to strengthen the market as it reduced the available supply.

Higher Gravities

There is more inquiry for the higher gravities and the business done is larger than during the warm weather, the chief demand coming from the Northwest where the weather has been cold. Some distributors are taking the advice of their refiners and are delaying the ordering of the higher tests in place of the U. S. Motor gasoline. Some dealers state that quite a number of motorists make it a practice to change from the U. S. Motor grade to the antiknock or a higher gravity gasoline around October 1. The market generally was unchanged for these grades, with the refiners holding at previous prices. Natural gasoline has been strong and is higher in price. There is considerable inquiry and some business although sales have been lost owing to the price named. In the differential territory east of this State there is little if any change in conditions. The Standard Oil Co. of Ohio is now naming a price of 13¾ cents delivered anywhere in the State but according to local dealers is meeting competition from any responsible refinery. At least two refineries in the Chicago district are shipping gasoline into Ohio where both have stations of their own as well as many dealer customers. One of these refineries is now shipping by tanker to Detroit where it has large bulk storage.

Kerosene Dull

Kerosene was dull all of last week and although some larger refiners are buying for their own stations there is a sufficient quantity offered to make it a buyers' market to some extent. The bulk of the sales to the trade were made at 6¼ cents last week, those holding for 6½ cents as did several not doing much business but there was little business to be divided up among so many anyway. The tractor season is about over although it may be prolonged by a warm fall.

Distillates have been in good demand. Right now there is a sort of a lull in the activities which were brought about by the rush of consumers to have their tanks filled with the coming of the cold spell. Zero gas oils were also wanted and the higher gravities of fuel oils. There was no general change in prices for distillates although some refiners with a limited output did mark up their quotations an eighth and in one instance a quarter of a cent. Several refiners have stated their idea that there would be a larger consumption of distillates this season and that so far as their own plants were considered their supply would be less as they were running less crude and would refine but little distillate. A better price might increase the supply. There are considerable shipments being made from various Texas plants, some sweet and some

(Continued on Page 131)

Kerosene Is Active in Eastern Market

Cold Weather Slows Motoring and Gasoline Shows Some Tendency to Decline Quarter of Cent. Furnace Oil Strong

By Special Correspondent

NEW YORK, Oct. 1.—Strong and active markets for kerosene and furnace oil, with an easy feeling and slow trading on gasoline, lubricating oils, and paraffin wax, have been the outstanding features of the situation in East Coast territory this week. Leading sellers are maintaining the market on U. S. Motor gasoline at 11¾ cents a gallon thus far, but is an open secret that this price has been shaded in recent trading, and refiners are expected to let the market down a quarter to a half cent in the near future. In one or two instances, sellers have intimated a desire to see the market definitely lowered, but have been unwilling to take the initiative in such a step. A definite and general reduction, it is felt, would restore market confidence and speed up trading a little.

The market at present is honeycombed with rumors as to the prices at which some business is being offered. Buyers in some cases have reported that they were offered motor gasoline as low as 11 cents a gallon with others claiming offerings at 11⅛ to 11¼ cents. The lowest price at whichh business has been confirmed, however, is 11½ cents, and it is believed that this will represent the general market in a very short time.

Cold weather has stimulated demand for furnace oil, and refiners are busy in getting out shipments of this fuel. Kerosene and gas oil have also felt the impetus of the seasonal change, and are moving in substantial quantities. In lubricating oils, buyers are holding off for lower prices, and refiners in most instances standing pat. Reductions in paraffin wax prices have developed during the week.

Sinclair has taken the lead in advancing the tank car kerosene market, but up to the time of writing other leading refiners had not followed in the increase. An early upswing in quotations of other refiners is looked for, however.

Tank Car Gasoline

Sellers describe the market as "weak at 11¾ cents," and this about sums up the situation here. Reports of sales at 11½ cents are frequently heard, and buyers report that they have been offered at 11¼ to 11¼ cents a gallon, but no confirmation of reported sales under the 11½-cent level is available. Although the leading sellers continue to quote 11¾ cents, there is a general feeling that the market is due to ease off a quarter cent almost any day now. In many instances, sellers would welcome a decline of this amount, as it would release considerable business which is now being withheld in anticipation of a decline.

Jobbers have remained out of the market to a great extent during the week, with the tendency toward hand-to-mouth buying even more pronounced. In many cases, distributors are down to a day-to-day basis, and are carrying practically no reserve supplies in their tanks. Weather conditions this week have aided the jobbers in this policy, in as much as the East has been in the grip of a sudden cold snap which has kept the temperature down around 50 and has sharply curtailed motoring.

Marketers have been very slow in putting out a price for October, and have been quoting on a day-to-day basis all week. Some interests expect a continuance of the 11¾ price during the first half of October at least but the consensus of opinion among operators favors 11½ cents as being nearer the actual level at which business will be done during this period.

Thus far, sellers in this territory have not experienced outside competition to any great extent, although it is expected that if they attempt to maintain the 11¾-cent market here in the face of falling prices in other sections of the country, there may be an influx of lower-priced motor fuel which will force a downward revision here. California gasoline can be laid down here materially under the spot quotation now, and if there was any likelihood of a continuance of the 11¾ cents basis by the leading sellers here it is considered probable that considerable quantities of Pacific Coast motor fuel would come forward.

Tank Wagon Market

A steady situation prevails on tank wagon gasoline, with leading refiners and marketers still quoting at 18 cents per gallon, the retail quotation ranging 20 to 21 cents. Premium motor fuels are generally listed at 21 to 24 cents a gallon at retail and have come in for heavier buying this week due to the colder weather which has been experienced.

With the tank car market holding at the peak price for the year, refiners see nothing in the market outlook for the immediate future justifying any reduction in the tank wagon price basis. The market was quite slow in following the tank car price on the upward move, and with an easier wholesale market, distributors look for an opportunity to average up on their year's sales before the tank wagon quotation goes down.

It is quite possible that the tank wagon market will go through the winter season at the 18-cent level, it is reported here. This price represents a gain of but 1 cent a gallon over the low level for the year, and appears capable of being maintained right along, barring any unforeseen radical break in the wholesale market at refineries. The 18-cent price was put into effect on a wholesale market under the present price basis.

Reports from various parts of the New York and New England territory indicate a well-stabilized situation prevailing in principal distributing markets. Leading marketers are adhering to the posted price schedule, notwithstanding the fact that the season of peak consumption is at an end, and refiners do not look for any "price wars" in any section of the country. This, of course, barring the entry of new factors into certain territory, such as the reported entry of Royal Dutch-Shell into New England territory with the supposed intention of competing in a large way with Standard Oil Co. of New York, Beacon Oil, Atlantic Refining and other large companies operating in this territory. Thus far, developments in the tank wagon market do not bear out earlier reports that Royal Dutch-Shell was contemplating action of this kind.

Furnace Oil

There was a heavy movement of furnace oil reported in East Coast territory this week, the cold wave which developed September 25 stimulating demand materially. Jobbers were putting in their "first fills" in home tanks and were coming into the wholesale market for rush shipments to fill in their depleted holdings and give them an adequate supply to take care of the demand reaching them from consumers. Refiners in this territory are carrying large totals of furnace oil business on their books, but had not looked for such an early buying wave.

Jobbers who had been withholding the placing of contract business for the coming winter season have been coming in this week in a large way for coverage. Prices are not expected to go any lower; in fact, any change in quotations would likely be in the other direction. Competition for furnace oil business is still rather keen, however, and this, together with the plentiful supply of fuel oil, is expected to aid in holding down prices.

Judging from the volume of furnace oil business reaching the refiners at present, it is evident that the number of new installations of home oil burning units this year has come up to the expectations of the most sanguine, and this feature of the business is expected to be an important one with refiners in this territory over the winter season.

Fuel Oil

Bunker "C" oil continues unchanged at $1.05 a barrel, bulk, at refinery terminals, with a good movement reported. The bulk of this business is on contract, comparatively little spot activity being witnessed. In as much as the large refiners in this area have booked contracts with the leading steamship companies which still have two years to run, but a small contract movement for 1929 is looked for. Normally, refiners during the closing quarter of the year start out to line up the big business on fuel oil for the following year, often with adverse effects upon the price basis, but this year the usual spirited campaign will be missing.

Industrial consumption of fuel oil continues at a satisfactory rate and refiners are moving out steadily increasing quantities of oil into industrial channels.

The market undertone, while not strong, appears fairly steady at the $1.05 level. What the market will do at the year-end is largely dependent upon developments in the crude oil situation by that time. Should the market in East Coast territory still be oversupplied with fuel oil, the low-priced Shipping Board contracts which go into effect at Atlantic Coast ports January 1 may carry the entire market down. On the other hand, any improvement in the statistical position of the fuel oil market would naturally have an important bearing upon the spot price basis.

Gas Oil

There was a steady movement of gas oil reported during the week. Deliveries to the gas companies in this territory are reported to have picked up considerably during the past fortnight, with a continued heavy movement in this direction looked for. The leading seller continues to quote 5¼ cents for 32-36 gas oil, bulk, at refineries, but other sellers are quoting at 5 cents a gallon.

With the furnace oil season getting into full swing, refiners have been paying more attention to the zero product, a good movement being in progress.

Stocks of gas oil are by no means plentiful in East Coast area, and while nothing in the nature of an actual shortage is anticipated, it is apparent that the spot position is rather firm and shows every indication of continuing so.

Kerosene

Demand is active and the market is stronger. Sinclair Refining Co. as of September 28 advanced its tank car quotation one-half cent at Atlantic and Gulf Coast ports to the following basis: New York, Philedlphia, Tiverton, R. I., and Portsmouth, Va., 9 cents; Charleston, S. C., Jacksonville and Tampa, 8¾ cents; New Orleans, 8½ cents, and Houston, 8 cents. Acewood Petroleum Corp. followed inthe advance in this market. Standard Oil Co. of New Jersey and other sellers, however, continue to hold to the 8½-cent quotation at Bayonne, although an early advance is looked for.

Jobbers have come into the market for supplies in considerably larger quantities this week, and refiners are well booked up for the next fortnight. At present, kerosene is in much stronger position than gasoiine. Domestic kerosene consumption has been running at a surprisingly heavy rate during the past several weeks, and the market enters the winter selling season in strong statistical position. Export movement has been of sizeable volume, and this has helped in keeping the market in East Coast territory in well sold-up position.

The kerosene tank wagon quotation is firm at 15 cents, which price has prevailed all year. Thus, there is a spread of but 3 cents a gallon between kerosene and gasoline in tank wagon lots, as compared with 3½ cents a gallon in the tank car markets. Other refiners and marketers in various parts of the country have advanced their kerosene price this year, in line with the high wholesale market, and it is quite likely that if the advance in the tank car market becomes general and the market again goes up the tank wagon quotation in New York and New England territory may go up.

Diesel Oil

"Steady markets and good demand" is the report on Diesel oil. Refiners declare that the market has undergone no important modification in any respect during the week, with the undertone still steady and sales showing slow, but appreciable expansion.

Refiners quote the market at $2 per barrel, bulk, f.o.b. refinery terminals. Ship operators are taking large quantities against old contracts and in addition there is a good deal of spot buying going on.

Lubs

The lubricating oil division is again marking time this week, with buying light. A continuance of the current lack of demand, it is felt, will bring about a general downward price reaction. On the other hand, it would take but a little flurry of buying to stabilize the situation around current going prices. It is a waiting game, with the uncertainty as to whether the refiner or the buyer can hold out longer.

Current bids on cylinder stocks are anywhere from a quarter to a half cent per gallon under quoted levels, and the fact that refiners are not disposed to accept these bids and get the market back on a trading basis illustrates rather well the sound condition underlying the market. While fractional concessions have been made on bright stock during the week, nothing in the nature of a general reduction has materialized.

Paraffin Wax

The market has sold off materially this week. Buying has fallen off to a considerable extent, and operators are showing considerable caution in further operations. In general, the market is off about a quarter cent per pound for the week. Large consumers in the wax paper and candle industries are reported out of the market in an anticipation of a further decline. The export market is quiet in so far as new business is concerned, although South America has been taking large quantities on old contracts. European buyers are also holding off, current bids being very much under recent trading levels.

Buyers and sellers are expected to get together shortly at levels about three-eighths to one-half cent under peak levels for the year on the lower melting points, and it is expected that considerable business now being withheld will be released when the market reaches that level. A number of eastern refiners are believed to be long on wax, having held their stocks in anticipation of a continued upward surge in prices. Current quotations on refined grades are as follows: The 120-122 a.m.p., 5½ cents a pound; 125-127 a.m.p., 5¾ cents; 130-132 a.m.p., 6½ cents; 133-135 a.m.p., 7¼ cents, and 135-137 a.m.p., 7¾ cents, all car lot basis, f.o.b. Bayonne. Crude scale, which

(Continued on Page 121)

Physical Constants of Hydrocarbons

Properties of Individual Components in Natural Gasoline Studied. Available Data Is Correlated for General Use

By Walter J. Podbielniak*

The standard testing methods for natural gas and gasoline such as the A.S.T.M distillation and the charcoal gas test do not yield the percentages of individual hydrocarbons, such as methane, propane, iso-butane, etc. The physical constants of these hydrocarbons are accordingly of little importance in the interpretation of the results of these tests. However, methods of analysis are now being used which actually determine the percentages of these hydrocarbons in natural gas and gasoline and such physical properties as boiling point, vapor pressures, liquid and vapor densities are essential both in the calculations of the analysis itself, and in the application of the analytical results to the various problems of plant and equipment design and control, and to research work. It is, therefore, most important to have full and accurate data on these properties. Unfortunately, comparatively little work has been done on the experimental determinations of the properties of the hydrocarbons present in natural gas and any compilation of such properties at present must be largely incomplete, supplementing what experimental data can be found and correlated from the technical literature by physical constants calculated on the basis of physico-chemical theory. As the experimental data are often conflicting, and as new experimental data are being from time to time contributed to the literature, there has resulted much confusion from the use of several different values for the same constants by different investigators or laboratories.

Standardization Needed

While authoritative and highly accurate data will not be available until much more experimental work has been done, it is desirable to standardize on a set of values for the physical constants of natural gas hydrocarbons, most frequently used in the natural gasoline industry, to eliminate the confusion mentioned and to make generally available a compact table of constants for those not having the time or facilities to thoroughly search the literature for data to bring older compilations to date. The table of physical constants of the hydrocarbons occurring in natural gas which is presented with this paper (Table 1) is the result of an effort to correlate and correct to present writing the material in previous compilations and the data found in a search of the technical literature. It is hoped that the table will be found specifically useful and that it may be adopted generally enough to eliminate some of the confusion in the use of several values for the same constant, also that it may serve as a basis for future corrections.

Since the specific purpose of the table is to provide constants for the interpretation and application of analytical data as ordinarily obtained for natural gas and gasoline, the table does not include constants for hydrocarbons not usually present in natural gas or likely to be determined separately in analysis, neither does it list values of properties not of interest from this viewpoint. For instance, cyclo-propane and tetramethylmethane are not included because they have been conspicuous by their absence in a large number of samples of natural gas and gasoline analyzed; on the other hand, nitrogen, oxygen, and carbon dioxide are listed, although not hydrocarbons, because they actually occur frequently in appreciable quantities in gas samples. The refractive index or thermal and electrical conductivity are not apparently used in any method of analysis and are not given in this table. It is not practicable to include in a table data for properties over a range of temperatures or pressures such as liquid and vapor densities, even if these were available in all cases; and it is not intended to make this table anything more than a set of the common constants in more general use in the natural gasoline industry.

*Before California Natural Gasoline Association at Los Angeles, Calif.

TABLE 2—MOLECULAR WEIGHTS OF SATURATED VAPORS AT 760 M.M.

Compound—	B. P.	Observed vapor density at B.P. temp. in g./cc.	M. W. calc. from observed vapor density	M. W. from formula	Per-centage deviation	Observer
Oxygen	−182.50	0.00442	32.82	32	2.6	Dewar
Carbon disulphide	46.25	0.00245	46.1	44	4.8	Batelli
Carbon tetrachloride	76.52	0.005598	160.56	153.8	4.4	Young
Zinc chloride	114.32	0.00860	273.2	260.8	4.8	Young
Water	100.00	0.0006057	18.51	18	3.0	Young
N-pentane	36.06	0.00296	75.03	72	4.1	Young
Iso-pentane	27.95	0.00307	75.8	72	5.4	Young
N-hexane	69.00	0.003279	92.0	86	7.0	Young
Diisopropyl	58.08	0.00330	89.7	86	4.3	Young
N-heptane	98.81	0.00347	105.8	100	5.8	Young
N-octane	125.44	0.00377	123.29	114	8.1	Young
Diisobutyl	109.22	0.00391	122.6	114	7.5	Young
Hexamethylene	80.81	0.00297	86.5	84	3.0	Young
Benzol	80.49	0.00277	80.4	78	3.1	Young
Flor-benzol	85.14	0.00337	99.0	96	3.1	Young
Chlor-benzol	132.05	0.00357	118.7	112.5	5.5	Young
Brom-benzol	156.04	0.00479	168.6	156.9	7.4	Young
Iodo-benzol	188.27	0.005704	215.9	203.9	6.9	Young

Note—(Rechenberg's Einfache und Fraktionierte Destillation, p. 82).

TABLE 3—MOLECULAR WEIGHTS OF SATURATED VAPORS AT 7,600 MM.

Compound—	B. P.	Observed vapor density at B. P. temp. in g./cc.	M. W. calc. from observed vapor density	M. W. from formula	Percentage deviation	Observer
Ammonia	+25.2°	0.008035	19.7	17	16	Dieterici
Water	180.31	0.005270	20.1	18	11.1	Dieterici
N-pentane	125.9	0.02854	93.4	72	29.7	Young
N-hexane	166.0	0.03219	116.0	86	34.9	Young
N-octane	235.1	0.03868	161.3	114	41.2	Young
Benzol	180.0	0.02487	92.4	78	18.5	Young
Ethyl ether	120.5	0.02969	95.9	74	29.6	Young
Methyl formate	111.9	0.0226	71.4	60	19	Young
Methyl n-butyrate	202.2	0.0342	133.4	102	30.8	Young
Methyl alcohol	137.4	0.0114	38.4	32	20	Young
Ethyl alcohol	151.3	0.01543	53.7	46	16.7	Young
N-propyl alcohol	175.4	0.0203	74.7	60	24.5	Young
Acetic acid	213.1	0.02653	105.8	60	76.3	Young

Note—(Rechenberg's Einfache und Fraktionierte Destillation, p. 83).

Data Correlated

The table is essentially adapted from previous compilations and it was, therefore, not thought necessary to accompany it with a voluminous bibliography. The compilations of most value in this work have been the collection of vapor pressure data in Rechenberg's Einfache und Fraktionierte Destillation, "Natural Gasoline," by Oberfell and Alden, an unpublished collection on the physical properties of hydrocarbons by Prof. W. K. Lewis and associates, "International Critical Tables," Young's work on the determination of vapor pressures and other properties of 30 pure substances (Proc. Roy. Dub. Soc., 12, [N. S.], 374,443, 1910), a chart of physical properties of the lower hydrocarbons up to octanes compiled by the laboratory of the General Petroleum Corp. of California; also numerous articles from the laboratories of Coffin and Maas, and a very thorough investigation of the thermodynamic properties of butane, isobutane and propane by Dana, Jenkins, Burdick and Timm, (Refrigerating Engineer, vol. 12, June, 1926, No. 12). The data have been correlated in a variety of ways and the final table of constants represents the writer's best judgment in the selection and averaging of the data. The data for propane, isobutane and n-butane were taken for the greater part from the article by Dana and associates, while the data for pentanes and hexanes are practically identical with those of Young. The specific gravities and pounds per cubic foot of vapor per gallon for the various hydrocarbons were calculated from the ideal vapor specific gravities and the experimental liquid densities.

The constants for the conversion of vapor to liquid volumes and vice versa are important as they are used for the conversion of per cent of hydrocarbon vapor in a gas to recoverable G.P.M.'s of hydrocarbon or of a gasoline of a specific analysis, also for the calculation of gas shrinkage after gasoline extraction. Since the constants in the table are based in part on the ideal gas laws, the question comes up as to the errors involved in the use of these constants. Obviously the constants, cubic feet of vapor at one atmosphere pressure and 60 degrees Fahrenheit per gallon of petane, or for heavier hydrocarbons, is a convenient fiction, as these substances do not exist in a gaseous state under such conditions but would liquefy immediately, and the fictitious constant is used only to save the labor of correcting volumes from conditions at which the vapors do exist to the standard conditions, using Boyle's law.

Vapor Densities

While experimental data on vapor densities for saturated and nonsaturated hydrocarbon vapors are very meager, it is well known that the densities of saturated vapors deviate from those calculated from ideal gas laws, and that these deviations increase with the rise of pressure and temperature of the saturated vapor, as shown in Figure 1 for saturated n-hexane vapor. It will be observed that the percentage of the deviation increases with the rise in the boiling point and in the corresponding vapor pressure of the n-hexane. If the curve were to be extended to the left or into vapor pressures below atmospheric (B. P. of n-hexane is 69 degrees Centigrade), the deviation would become small even for the saturated vapor. While the vapor tends to expand at higher temperatures it is subject to the vapor pressure of the liquid (for a saturated vapor), and as the vapor pressure increases very rapidly with temperature, the net effect is to reduce the specific volume of the vapor and to "pack" the molecules of the vapor closer, thus bringing into action molecular attractions not allowed for in the simple gas laws, i.e., Boyle's law and Charles' law, resulting in deviations from densities calculated from these laws. The vapor is always denser than calculated as the attraction of the mole-

NAME OF GAS OR VAPOR	FORMULA	MOLECULAR WEIGHT	MELTING POINT °C	MELTING POINT °F	BOILING POINT °C	BOILING POINT °F	CRITICAL TEMP °C	CRITICAL TEMP °F	CRITICAL PRESSURE ATM	LIQUID DENSITY AT 60°F Gms/cc	LIQUID DENSITY AT 60°F °A.P.I.	LIQUID DENSITY AT 60°F #/GAL.	HEAT OF VAPORIZATION AT BOILING POINT	VAPOR PRESSURE AT 68°F(20°C)	VAPOR DENSITY AT 760 mm & AT 60°F SPEC. (AIR 1)	VAPOR DENSITY AT 760 mm & AT 60°F GRAVITY #/CU FT.	CU FT. VAPOR/GAL. 760 mm AND 60°F	GROSS HEAT OF COMBUSTION B.T.U.'S/LB	GROSS HEAT OF COMBUSTION B.T.U.'S/CU FT
METHANE	CH_4	16.03	−183	−296	−161.4	−259	−82	−115	51						.554	.04226		23970	1008
ETHANE	C_2H_6	30.05	−172	−278	−88.3	−127	34	93	50				238	500	1.038	.0792		22340	1763
PROPANE	C_3H_8	44.06	−191	−312	−42.2	−44.0	100	212	46	.505	145.3	4.20	183	10.11	1.523	.1162	370	21,590	2508
ISO-BUTANE	$(CH_3)_3CH$	58.08	−145	−229	−12.2	10.0	133.7	273	36.34	.562	120.3	4.69	158	36.7	2.007	.1531	386		3260
N-BUTANE	$CH_3CH_2CH_2CH_3$	58.08	−135	−211	−0.6	30.9	151	304	37.5	.581	112.0	4.85	163	26.3	2.067	.1578	367	21,300	3273
ISO-PENTANE	$CH_3{-}CH_2{-}CH{-}CH_3$	72.10	−160	−256	29.0	82.4	187.8	370	33.0	.628	94.9	5.22	147	9.46	2.491	.1902	374		
N-PENTANE	$CH_3(CH_2)_3CH_3$	72.10	−131	−203	36.1	97.0	197.2	387	32.04	.631	92.4	5.27	153	6.99	2.491	.1902	377	20,940	4027
TERTIARY HEXANE	$(CH_3)_2{-}C{-}CH_2{-}CH_3$	86.11	−98	−145	49.6	121.2									2.975	.2272			
DIISOPROPYL	$(CH_3)_2CH{-}CH(CH_3)_2$	86.11	−135	−211	58.1	136	227.4	441	30.72	.646	84.0	5.86	157	3.07	2.975	.2272	345		
ISO-HEXANE	$(CH_3)_2CH{-}CH_2{-}CH_3$	86.11			62.0	144									2.975	.2272			
N-HEXANE	$CH_3{-}(CH_2)_4{-}CH_3$	86.11	−94	−138	69.0 (685 mm)	156.0 (153.8 at 760 MM)	234.7	455	29.8	.663	81.9	5.53	143	1.89	2.975	.2272	344	20,750	4762
ISO-HEPTANE	$(CH_3)_2{-}CH{-}(CH_2)_2{-}CH_3$	100.13													3.459	.2640			4730
N-HEPTANE	$CH_3{-}(CH_2)_5{-}CH_3$	100.13	−91	−132	98.6	209	266.9	513	26.9	.687	74.5	5.73	137	.56	3.459	.2640	317	20,830	5540
DIISOBUTYL	$(CH_3)_2{-}CH{-}CH_2{-}CH(CH_3)_2$	114.14			109.2	229	277	531	24.6	.690	73.2	5.83		.26	3.944	.3012	313		
N-OCTANE	$CH_3{-}(CH_2)_6{-}CH_3$	114.14	−56	−70	125.6	258	296.3	565	24.7	.706	68.9	5.89	127	.15	3.944	.3012	286	20,790	6291
N-NONANE	$CH_3(CH_2)_7{-}CH_3$	128.16	−51	−59	149.5	301	320	608	23						4.428	.3381		20,700	7050
N-DECANE	$CH_3{-}(CH_2)_8{-}CH_3$	142.18	−32	−25	173	343	347	657	21						4.892	.3731		20,620	7805
CYCLOHEXANE	$CH_2{<}CH_2{-}CH_2{>}CH_2$	84.10	6.4	44	80.8	177.2	280	536	39.62	.783	49.2	6.53	184	.132	2.902	.2216	293	20,551	
NITROGEN	N_2	28.02	−210	−347	−195	−320									.967	.07385			
OXYGEN	O_2	32.00	−227	−377	−182.8	−297.0									1.105	.08438			
CARBON DIOXIDE	CO_2	44.00	−56	−130	−78.5	−109									1.519	.116			

Figure 1—Table of physical constants for hydrocarbons found in natural gas and natural gasoline.

cules for each other acts like increased pressure on the gas.

Pressure Effect

Table 2 shows the extent of this deviation for saturated vapors of many compounds at a pressure of one atmosphere. While the boiling points at one atmosphere of the liquids listed covers an enormous temperature range, the per cent deviations from ideal are all of the same order of magnitude, about 3 to 5 per cent. The average deviations for the paraffin hydrocarbons is 4.2 per cent. The saturated vapors at a pressure of 10 atmospheres as shown by Table 3 are about 30 to 40 per cent denser than required by the ideal gas laws, or the deviation is roughly proportional to the pressure. The paraffin hydrocarbons do not appear to be markedly different in their behavior from other nonpolar compounds in these tables. We might, therefore, expect that at a pressure of one-tenth of an atmosphere the per cent deviation from ideal gas laws for a saturated vapor of a paraffin hydrocarbon would be only about 0.3 to 0.5 per cent whether the vapor be methane, propane, pentane or octane; the temperature of the liquid and vapor would of course vary greatly with the particular hydrocarbon.

Unsaturated Hydrocarbons

Practically no data are to be found in the literature on the deviations of unsaturated paraffin hydrocarbon vapors from ideal gas laws. It is to be expected that the more unsaturated a vapor is, the less it deviates from ideal gas laws, as then the effect of the undue molecular attraction existing at the saturation point is lessened. To show just how this deviation varies with the degree of unsaturation of the vapor, the Bertholet equation of state for gases at comparatively low pressures is particularly convenient—

$$PV = RT\left\{1 + \frac{9}{128}\frac{PTc}{PcT}\left(1 - 6\frac{Tc^2}{T^2}\right)\right\}$$

In this form the equation involves the constants of critical temperature and pressure characteristic for each individual hydrocarbon, and furnishes a means for calculating vapor densities more accurately than by the simple gas laws, $P V = R T$. For a vapor at constant temperature the Bertholet equation may be simplified as follows:

$$P V = R T (1 - k P)$$

where k P is the deviation (expressed as a fraction) of the product P V from the simple gas laws. Obviously, this deviation is directly proportional to pressure and if we know it for some one pressure, we can calculate it for all pressures at the same temperature from the pressure at which the vapor condenses, to zero pressure. Since the Bertholet equation has proven accurate enough for use in calculating atomic weights from the observed densities of the vapors at moderately low pressures, it may be used with considerable confidence for the calculation of unsaturated vapor densities within the pressure limitation of not more than a few atmospheres.

It follows from the above equation that Boyle's law is not strictly correct as the product P V at constant temperature is not constant with varying pressure but is subject to the correction factor $(1 - k P.)$

The above discussion of the deviations of saturated vapor from ideal gas laws with varying boiling and vapor pressure of the liquid, and of the deviations of unsaturated vapors from ideal gas laws with varying pressure but at the same temperature leads to the following conclusions:

1. The per cent deviation of saturated vapors from ideal gas laws increases with pressure in almost direct ratio.

2. At the same pressure the per cent deviation of most saturated vapors (with exception of highly polar compounds) is of the same order of magnitude.

3. At the same temperature the per cent deviation of unsaturated vapors from ideal gas laws varies directly with the pressure.

In the case of the hydrocarbons normally occurring in natural gas, methane, being farthest removed from its saturation or condensing point at one atmosphere pressure and 60 degrees Fahrenheit, approaches an ideal gas very closely under these conditions. As we go down the scale of the hydrocarbons, ethane, propane, iso-butane and n-butane deviate more and more, respectively, from ideal gas behavior; the pentanes are of course liquid at one atmosphere pressure and 60 degrees Fahrenheit. If we consider n-butane at its normal boiling point at one atmosphere, 97.0 degrees Fahrenheit the per cent deviation of the density of the saturated vapor from the density calculated from ideal gas laws is 4.1 per cent (Table 2.) If this saturated pentane vapor be expanded to a pressure of half an atmosphere, it would follow from the previous discussion of Bertholet's equation that the deviation from ideal density under the new conditions would be halved and would thus be only 2.0 per cent instead of 4.1 per cent. Since the product of pressure and volume is not constant but is multiplied by the correction factor $(1 - k P)$, Boyle's Law does not hold strictly and the volume of the same weight of pentane vapor at half an atmosphere pressure would not be twice its volume at one atmosphere but 2 times 94/96 or 2.04 times. The same effect would be obtained whether the pentane vapor be subjected to a reduced pressure of half an atmosphere or whether it be mixed with another gas at a total pressure of one atmosphere to a 50 per cent mixture, so that its partial vapor pressure becomes half an atmosphere. Dalton's Law would here be subject to an error of the same magnitude as Boyle's Law in the previous example because of the undue expansion of the pentane vapor upon reduced partial vapor pressure. At higher pressures such as used in high pressure fractionating columns for natural gasoline, amounting to 250 pounds per square inch these deviations become very considerable especially for the heavier hydrocarbons and may amount to over 25 per cent for the heavier hydrocarbons. On the other hand, at atmospheric and lower pressures, the deviations from Dalton's Law and Boyle's Law may be considerably less than 1 per cent depending upon the degree of saturation of the individual hydrocarbons present in a mixture.

Constants Accurate

It follows from the above that the factor for conversion of vapor to liquid volume is not a constant for a particular hydrocarbon as implied in Table 1, but varies from the value calculated from ideal gas laws to even widely different values for high pressures and vapors near their saturation point. However, at the temperatures and pressures at which vapors are measured in the laboratory, the ideal constants are fairly accurate and by working at low partial vapor pressures so that the heavier vapors are measured far away from their condensing points, the error can be made as small as desired. To endeavor to correct these ideal gas constants for the conditions of high partial vapor pressure and near-saturation is an involved procedure and requires more data than are at present available. It may be pointed out that the above considerations apply with full force to calculations for slow-combustion analysis of heavy vapor mixtures, and that the indiscriminate use of equations "corrected" for deviations from ideal molecular volumes of propane, butanes and pentanes, without regard to the partial vapor pressures at which they are measured, may introduce considerably more error than the use of equations based on ideal gas laws.

KEROSENE IS ACTIVE IN EASTERN MARKET

(Continued from Page 119)

has scored the greatest percentage price gain of any of the cheaper grades, is showing the greatest weakness at present.

Petrolatum

Conditions on this product have shown no important changes during the week.

Exports

Gasoline has sold in better volume this week for shipment abroad, and the market has steadied a little. Navy gasoline cases holds unchanged at 26.90 cents, with bulk Navy quoted at 11¾ cents at New York and 10 cents at the Gulf. Export inquiry for 66-68 naphtha is reported better, with refiners in East Coast territory quoting 16¼ cents. At the Gulf, a fair movement is reported this week in 64-66 375 endpoint naphtha at 11⅝ cents a gallon.

Export operators have been taking kerosene in better volume this week and the market is strong, with an early advance looked for. Cased kerosene is firm at 17.40 cents for standard white and 18.65 cents for water white. The bulk market is 7¾ cents for prime and 8¾ cents for water white here, with the market at the Gulf 1 cent a gallon under these figures.

Demand for lubricating oil for export did not come up to expectations this week, although sellers are looking for an early revival in this branch.

Petroleum Exports

The following table shows principal exports of petroleum and refined petroleum products from New York during the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	Sept. 21	Sept. 14	Sept. 7
Gasoline	490,000	239,000	30,000
Naphtha	5,374,500	1,329,000	588,100
Kerosene	2,000	538,500	135,000
Fuel oil	41,500	58,000	3,500
Lubricating oil	2,953,900	1,205,000	1,811,100
Petroleum, ref'd	3,712,900	1,483,000	390,000
	Pounds		
Petrolatum	53,500	22,300	5,200
Paraffin wax	3,534,300	1,439,500	1,333,000
Refined	.....	28,600	.....
Scale	.....	.....	105,200
Lubricat'g grease	2,110,500	814,200	377,200

California Oil Receipts

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended September 22 totaled 932,000 bbls., a daily average of 133,143 bbls., against 226,000 bbls., a daily average of 32,286 bbls. for the week ended September 15 and a daily average of 66,429 bbls for the four weeks ended September 22.

(Barrels of 42 U. S. gallons.)

At Atlantic Coast Ports—	
Baltimore	80,000
New York	332,000
Philadelphia	350,000
Others	170,000
Total	932,000
Daily average	133,143
Daily average four weeks ended	66,429

Distribution of total California oil receipts is as follows:

Crude	80,000
Gasoline	599,000
Gas oil	70,000
Kerosene	93,000
Tops	90,000

Imports

Imports of crude and refined oils at the principal United States ports for the week ended September 22 totaled 1,286,000 bbls., a daily average of 183,714 bbls., compared with 1,310,000 bbls., a daily average of 187,143 bbls. for the week ended September 15 and a daily average of 228,786 bbls., for the four weeks ended September 22.

(Barrels of 42 U. S. gallons.)

At Atlantic Coast Ports—	
Baltimore	60,000
Boston	133,000
New York	590,000
Philadelphia	140,000
Total	923,000
Daily average	131,857
At Gulf Coast Ports—	
New Orleans and Baton Rouge	208,000
Port Arthur and Sabine district	155,000
Total	363,000
Daily average	51,857
At all United States ports	1,286,000
Daily average	183,714
Daily average four weeks ended	228,786

Late Fields

(Continued from Page 38)

acceptable to the majority of operators of the pool.

The flush pools and their output on Tuesday morning were:

	Bbls.
Greater Seminole	335,528
St. Louis	118,939
Allen	20,000
Lovell	9,000
Total	483,467

According to the order of the Oklahoma Corporation Commission, the output of these pools is to be limited to 425,000 bbls. daily, and in order to accomplish this, it appears that it will be necessary to prorate the wells 12 per cent of their peak production. This procedure would allow the flush pools 425,454 bbls.

The intrusion of water in St. Louis increases, especially in wells which are on the edge. The Wilcox sand discovery well, Magnolia Petroleum Co.'s No. 1 Hembree, NW cor. SE, Section 19-7-5, is now making 160 bbls. of salt water per hour and 486 bbls. of oil per day. This well has been steadily decreasing in oil output.

The only important completions were in the Earlsboro extension and were: Superior Oil Corp.'s No. 3 Walker, NE cor. NE, Section 2-9-5, which is swabbing 250 bbls. daily from Wilcox sand 4,431-33 feet. This well is not as large as the other wells which have been completed on this property. The Texas Company's No. 1 James, NW cor. SE, Section 6-9-6, had the sand 4,367-77 feet and flowed 250 bbls. the first seven hours.

NORTH LOUISIANA

SHREVEPORT, La., Oct. 2. — Magnolia Petroleum Co.'s No. 1 Cook, Section 2-22-11, in the Spring Hill district of Webster Parish, completed September 21 as a 150-bbl. pumper from 2,711 feet, is actually pumping 200 bbls. of 27.4 gravity crude with 1 per cent water and 2 per cent sediment. The company is laying 5 miles of combination 3 and 4-inch line from Sarepta station to the well, which will be the first outlet for production in this new-old area. Production was obtained here in 1923-24 by Lloyd Harris, who drilled half a dozen wells and got a total of around 500 bbls. daily, most of the producers making more gas than oil. Production was moved out in tank trucks. Two narrow streaks of oil sand have been located in this part of Webster, 10 miles southeast of Cotton Valley, and it is thought there is also a deeper stratum.

Palmer Corp.'s No. 3 Tillman in Section 28-21-10, about 3 miles south of the Cotton Valley deep Trinity discovery well, which, too, had sand showing oil from 4,641-53 feet, set liner, bailed, and gauged 37,084,000 feet of gas with no show of oil or water.

WEST TEXAS

FORT WORTH, Tex., Oct. 2.—In Winkler County, Independent Oil & Gas Co.'s No. 2 Cowden, Section 36, Block B-5, topped pay at 2,985 feet and encountered sulphur water at 3,071-84 feet. The well was making 40 bbls. daily before encountering sulphur water and will be plugged back. Empire company's No. 1 Lum Daugherty, Section 3, Block 74, in the Leck area of Winkler County, cored through shale at 2,830-49 feet and is making enough gas to flow the drilling mud from the hole. The gas was found at 2,812-30 feet.

NORTH TEXAS

An old temporarily abandoned test drilled by Moody Oil Corp. in Haskell County was deepened 25 feet this week and has opened that county for production. Moody Corp.'s No. 1 Reynolds Cattle Co., J. Fenner Survey, is making 2,000,000 feet of gas and spraying 60 bbls. daily from sand barely scratched at 1,725 feet. The well was temporarily abandoned in December, 1927, at 1,703 feet. A short while ago it was rigged up and deepened 22 feet to uncover the first production discovered in Haskell County. The well was located on surface geology mapped some time ago according to H. H. Adams of the Moody Corp.

DEATH OF C. E. MARTIN

TITUSVILLE, Pa., Oct. 2. — C. E. Martin, aged 67 years, vice president and director of the National Transit Co., died here last night. Mr. Martin had been with the National Transit Co. for many years and was widely known among the older men of the oil industry.

Brief Items for Petroleum Refiners

GASOLINE CONSUMPTION INCREASES 11 PER CENT

Gasoline consumption in 37 states for the month of July, 1928, as indicated by reports made by wholesalers and dealers in the various states under provisions of the gasoline tax laws or gasoline inspection laws totaled 765,349,000 gallons, compared with 689,351,000 gallons in July, 1927, an increase of 75,998,000 gallons, or 11.0 per cent, according to the American Petroleum Institute. Daily average consumption for July, 1928, was 24,689,000 gallons compared with a daily average of 22,938,000 gallons in June, 1928, an increase in daily average during July of 7.6 per cent.

Gasoline consumption in these 37 states for the seven months ending with July, 1928, amounted to 4,215,758,000 gallons compared with 3,757,848,000 gallons for the corresponding period of 1927, an increase of 457,910,000 gallons, or 12.2 per cent.

Figures for the second quarter of the year for the State of Pennsylvania showing 190,877,000 gallons consumed, were received too late to be included in the June report. This compares with 146,846,000 gallons in the second quarter of 1927.

The figures giving the quantity of gasoline sold or offered for sale, as reported under various laws follow: In some cases they are gross figures before deductions allowed for small quantities of gasoline reshipped or sold for other than taxable use, the tax upon which if paid, is subsequently refunded. All figures are subject to revision.

	7 months ending with	
	July, 1928 Gallons	July, 1927 Gallons
Alabama	93,940,000	79,440,000
Arizona	31,598,000	20,516,000
Arkansas	63,506,000	52,802,000
Colorado	83,649,000	72,166,000
Delaware	15,229,000	13,067,000
Dist. of Columbia	35,574,000	32,829,000
Florida	139,230,000	151,689,000
Georgia	116,217,000	105,298,000
Idaho	25,904,000	21,481,000
Indiana	210,791,000	179,139,000
Iowa	171,552,000	178,345,000
Kansas	177,537,000	150,489,000
Kentucky	71,202,000	61,646,000
Louisiana	92,196,000	83,518,000
Michigan	357,699,000	330,059,000
Minnesota	177,784,000	156,180,000
Missouri	196,868,000	178,606,000
Nebraska	113,600,000	91,705,000
Nevada	7,885,000	7,007,000
New Hampshire	23,905,000	22,515,000
New Mexico	20,041,000	16,416,000
North Carolina	135,438,000	116,874,000
North Dakota	57,763,000	41,600,000
Ohio	468,513,000	426,224,000
Oklahoma	155,433,000	139,456,000
Oregon	78,833,000	71,197,000
Rhode Island	36,717,000	33,976,000
South Dakota	60,060,000	45,573,000
Tennessee	91,795,000	79,978,000
Texas	369,997,000	322,809,000
Utah	27,124,000	22,931,000
Vermont	17,438,000	16,402,000
Virginia	99,674,000	89,272,000
Washington	126,129,000	112,785,000
West Virginia	58,089,000	53,031,000
Wisconsin	189,195,000	166,956,000
Wyoming	17,653,000	13,991,000
Total	4,215,758,000	3,757,848,000
Daily average	19,792,000	17,726,000
Increase over previous year:		
Amount	457,910,000	
Percentage	12.2	

STARTS REFINERY

CHICAGO, Sept. 29.—Arthur Anson, vice president and sales manager of the Altitude Petroleum Co., was at the Chicago office for several days. He states that the new refinery of the company at Big Spring, Tex., will begin operations early in October, brief delays due to minor causes having necessitated postponement.

PATTERSON LOCATES ON COAST

CHICAGO, Sept. 29.—L. M. Patterson, recently manager of refinery sales for the Bartles-Maguire Co., has permanently located in California where he has joined the staff of the Union Oil Co. of California.

WOULD USE PART OF GASOLINE TAX TO ADVERTISE ROADS OF STATES

By Ike W. Crabtree*

General Counsel for Producers & Refiners Corp. of Tennessee

The gasoline excise tax finds its justification in the demand and necessity for the construction and maintenance of highways and public roads. It is sometimes referred to as a popular tax. The danger in this is the tendency to cause the states to overdo it.

The gasoline tax now averages about 20 per cent of its cost to the consumer. The tax being an excise, should be levied and paid on the gasoline as a commodity, regardless of the use made of it by the consumer, and regardless of whether the consumer is an individual, a corporation, or a government. There is no more logic in excluding the farmer, the cleaner, the aviator, and the government, from the payment of the tax, than there would have been in making an excise revenue distinction between liquor sold by a druggist for medicinal purposes and that sold by a saloonist as a beverage. The tax is on the commodity. All the people, every class of business and the government itself, benefit directly from the purposes accomplished by it — the construction and maintenance of roads. The tax, whether you call it an excise, a privilege, or a property tax, should be a part of the cost of the commodity to all users of it.

How should the tax be levied? I submit that it should be levied and paid on imports and purchases for resale or use, instead of on sales, as proposed in the model gasoline tax act. By making amounts imported or purchased the basis for the levy of the tax, the effect of the decision of the Supreme Court of the United States in Panhandle Oil Co. versus Mississippi, holding that the tax on sales of gasoline to the Federal Government cannot be collected, would seem to be avoided. Upon the announcement of that opinion, the State of Mississippi promptly changed the levy basis from sales to purchases, and the question will probably not arise in that state again.

Protect Legitimate Dealers

The collectors of the tax are the oil dealers, (the refiner being treated as a dealer when so engaged in the state), and the direct purchasing users. They pay it, and in turn collect it from the consumer by adding it to the price to the consumer. They should be required (1) to procure a permit from the excise tax commissioner to engage in the business of dealer or user; (2) to execute bond in penalty of not less than $3.000 to guarantee payment of taxes to the state; and (3) should be required to pay the taxes monthly. Any model or uniform act should make those requirements. The highway departments as they are now functioning, must use this revenue as current funds, and they should receive it monthly. Besides, the monthly settlement and the bond requirements, will remove the hazard of the loss of revenue from the irresponsible and seasonal dealer.

The legitimate dealer, who has his money invested in the oil industry, and is devoting his time and energies to it, will not object to any reasonable requirements. He doesn't want to evade the tax. He will welcome a law with sufficient teeth, and manned by such capable officials as will make evasion of the tax most difficult, if not impossible. The tax evader is a menace not only to the interests of the state, but to the interests of the oil industry.

Now, to what specific purposes should this gasoline tax revenue be apportioned and devoted?

First, of course, it should bear the cost of its collection and administration. Under the existing laws, with a rare exception, the cost is borne by the oil dealers. The cost of administration is borne by the state and paid out of the revenue.

Why should the oil dealer be burdened, without compensation, with the costs of collecting for the state this immense revenue? In Tennessee the oil dealer pays a heavier privilege tax to the State, the counties, and the municipalities for the privilege of conducting his business

(Continued on Page 135)

*Before North American Gasoline Tax Conference, Memphis, Tenn., October 1, 1928.

CITIES SERVICE SALES SESSION AT CLEVELAND

CLEVELAND, Ohio, Sept. 29.—The Cities Service Oil Co., oil sales subsidiary of the Cities Service Co., closed its annual meeting after a three-day session at the Cleveland Hotel. The meeting was for the purpose of discussing sales plans for the coming year. About 75 officials and sales heads were in attendance at the meeting.

Among the officials present were F. R. Coates, Judge A. Castor, H. T. Frueauff, and R. A. Wotowitch of New York, H. R. Straight of Bartlesville, Okla, and P. M. Miskell of Tulsa.

IN CHARGE OF DOMESTIC SALES

Effective October 1, W. S. S. Rodgers, assistant to the president, has been elected vice president in charge of domestic sales of The Texas Company. He has also been made a vice president of The Texas Corporation in place of W. W. Bruce, resigned.

OPENS CHICAGO BRANCH

Dale W. Moore announces the opening of a branch office in Chicago, at 2701 Mather Tower, 75 East Wacker Drive, in charge of L. A. (Al) Stewart. Mr. Stewart's experience in refining and marketing dates over a long period of years. Two years ago Howard E. Felt became associated with Mr. Moore and a Chicago office has been opened to better serve his various connections. General offices will still be maintained in Tulsa. The business of Dale W. Moore was established in 1921 at Tulsa as a special buying representative for users of petroleum products who do not maintain a Tulsa office.

OIL CITY ENLARGEMENT

OIL CITY, Pa., Sept. 29.—The Continental Refining Co. is enlarging the capacity of its local refinery to secure a large output of finished motor oils. The enlargement includes the installation of five additional centrifuge machines.

BARNSDALL SALES MEETING

CHICAGO, Sept. 29.—The sales force of the Barnsdall Refineries, Inc., will attend a sales meeting to be held at the Tulsa offices, October 5 and 6. On the way to Tulsa the salesmen will spend one day at the Four State Meeting at Kansas City.

CRYSTAL OIL WORKS HAS NEW WAX HOUSE

OIL CITY, Pa., Sept. 29.—The Crystal Oil Works during the past week completed and placed in operation its new wax house. The improvement, which cost $50,000, replaces the wax house which was burned down last April. The new brick building is 40 by 60 feet and is two stories high. It includes two press rooms in each of which has been installed a 48-inch press with 200 plates. The new building also provides more space for barreling and wax storage.

The Crystal refinery was the second to be built in this section, the original plant having been constructed in 1886. Some of the original equipment is still in use at the plant. J. A. Fawcett, who with E. V. Selden owns the plant, is in charge of operations. Mr. Fawcett is one of the veteran refiners of the Oil City area, having been manager of the Crystal plant for the past 38 years.

VACUUM DISTILLATION UNIT AT OIL CITY, PA.

OIL CITY, Pa., Sept. 29.—The Independent Refining Co. of this city will complete the installation of a vacuum distillation unit at its local refinery within the next 30 days. The new unit is something new in Pennsylvania refining and its operation will be watched with considerable interest in this field.

The new unit incorporates a pipe still for the reduction of the topped crude with a large tower operated under vacuum for the separation of the lub stocks. The company is also installing a pipe still unit to be used in the manufacture of finished bright stocks.

WAVERLY OIL WORKS ADDS CRACKING UNIT

PITTSBURGH, Pa., Sept. 29.—The Waverly Oil Works now has in operation at its Coraopolis refinery a large Cross cracking unit of the latest design. The unit has a capacity of 2,000 bbls. daily.

The Coraopolis plant is now operated with Mid-Continent crude oil, the company no longer securing crude from the Somerset Field in Kentucky. The plant is handling approximately 3,500 bbls. of crude oil daily. The Pittsburgh refinery of the company from which the Waverly lubricating oils are obtained operates exclusively on Pennsylvania crude oil.

ILLINOIS GASOLINE TAX HEARING

CHICAGO, Sept. 29.—The matter of the return to the oil companies of gasoline taxes collected under the State law which was declared illegal will come before the Circuit Court at Springfield, Ill., on October 5. The State holds $6,000,000 of the gasoline tax which oil companies who paid the tax are trying to have returned to them. An injunction prevents the distribution of the tax as provided by the act which was declared illegal. Recently various county boards have tried to secure the payment of their share under the act of the taxes collected. The Board of County Commissioners of Cook County has passed a resolution attacking the oil companies for bringing suit and tying up these funds and directing that no more oil be purchased for the use of the county institutions from any oil company which was a party to such a suit. The oil companies contend the State had no right to collect the tax and having collected large sums from the companies under an act of the Legislature which has been declared unconstitutional the State has no title to this money which belongs to the oil companies, the latter being in their turn liable to their customers from whom the tax was collected.

Natural Gasoline Manufacture

IMPORTANCE OF SAMPLING EXPLAINED BY WARNEN BEFORE ASSOCIATION

In a paper by L. O. Warnen before the National Gasoline Association of California, he said: There are two major factors which directly control this analytical accuracy—first, the accuracy of the method of analysis itself, and second, the accuracy with which the actual sample analyzed represents the commodity. The second factor may be subdivided into the ability to (a) take a representative sample into a container, (b) transport and store such samples without loss or change of composition, and (c) transfer a representative portion into the analytical apparatus.

Assuming that the method of analysis is dependable, the value of the results will be proportional to the fidelity with which the sample represents the composition of the commodity.

Classification of Commodities

Materials used in the natural gasoline industry normally occur either in the vapor phase or the liquid phase and are so measured. There are a variety of commodities, however, that easily form a second phase unless extreme care is taken to preserve the correct pressure temperature relationship. So few persons have had experience in sampling for fundamental analysis that we believe it of value to tabulate for a variety of commodities our idea of the relative dependability of such samples. This tabulation is presented in chart form. As the ratings are based upon specific sampling procedures, these will be described later, not as the best methods but as a starting point for discussion and development.

Dependability Factors

While the factors tabulated are not the only ones these influence the dependability to a large extent. The five major factors are as follows:

(a) Variation of composition over a period of time;

(b) Ease of taking sample;

(c) Stability of sample during transportation and storage;

(d) Ease of transferring a representative sample from the container;

(e) Ease of measurement.

The weight to be given to any factor depends upon the purpose of the analysis and the care exercised. For example, variation of composition with time is a large factor if comparison with plant operation is the object, whereas, for instantaneous conditions other factors would control. Because a certain commodity is given a low dependability rating in the accompanying chart, it does not follow that accurate sampling is impossible, but rather that a sample taken under unknown conditions cannot be assumed to be more accurate than the rating. The factor, ease of sampling, concerns the location of sample taps with regard to the composition, accessibility, leakage into vacuum lines and special sampling equipment. The factor, hazard in transportation, does not affect the dependability but relates to the care required in preparing such samples for shipment against hazard from leakage or breakage.

Vapor Phase Sampling

Materials existing largely in the vapor phase should be so measured and the results reported in per cent by volume. This is the equivalent, neglecting deviation from Dalton's law and Boyles law to the partial pressures. Absorption and stripping calculations are based upon data in this form. Samples of gases (or vapors free from condensate at atmospheric temperature and pressure) are easily collected by displacement of mercury or water. Glass bottles having the patent clamp stopper similar to citrate of magnesia bottles are preferred as they are easily closed under liquid and if stored with necks down the rubber washer is covered with liquid, preserving the rubber and reducing leakage. The glass does not corrode as metal does, is easily cleaned and the presence of oil spray or dirt is immediately visible.

Vacuum line samples and vapors containing appreciable residues should be drawn through the container by a suitable pump and after thorough purging the valves or glass stopcocks closed while connected to the source. The contents of the bottle or the double valve bomb is easily transferred to the apparatus in the laboratory using a mercury sealed stopper and mercury transfer pump. Vacuum samples are handled in the same manner in the laboratory as atmospheric samples by first pumping out the space below the valve.

Liquid Phase Sampling

Materials present normally in the liquid phase might be reported either as per cent by volume or per cent by weight. The principal use of such data

(Continued on Page 135)

SKELLY OIL CO. ADDS TO GASOLINE PLANTS

The Skelly Oil Co. is making several major additions to its gasoline plant units in the Panhandle and Seminole Fields. A 10,000,000-foot booster station is being erected in the Noel Pool 4 miles south of the company's gasoline plant on the Shaffer ranch in Carson County, Texas. This station will augment the supply of gas now going to the gasoline plant and the increased volume of residue gas will be burned in a fifth unit to be added to the Cabot company carbon black plant to be built near this location. In the Seminole Field the Skelly company is adding six more compressors to its Earlsboro plant which will bring the capacity of it to 20,000 gallons daily. This is the third time the plant has been increased in size since its erection less than a year ago.

An absorption unit is also being added to the company's Little River booster station which when completed will produce about 7,000 gallons of natural gasoline daily.

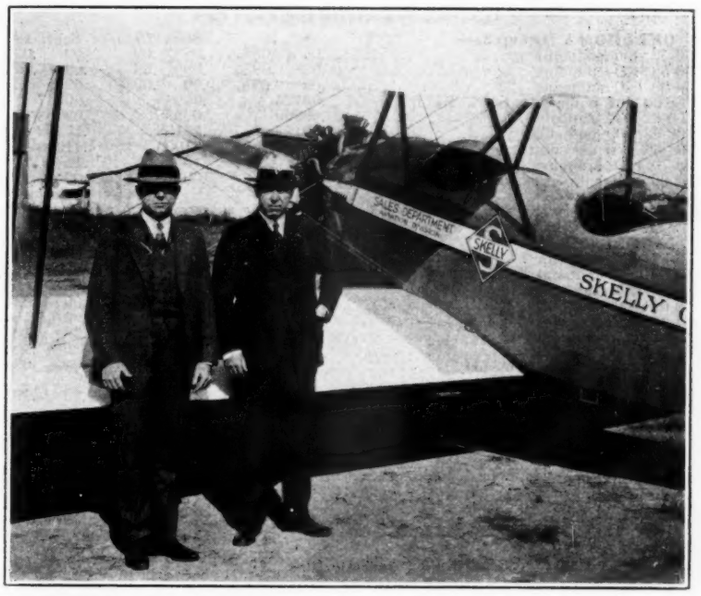
N. G. A. TEST METHODS

H. A. Trower, president of the Natural Gasoline Association of America, has appointed a committee to handle the publication of the association's test methods, etc., as needed and the committee will begin to prepare a loose-leaf code book containing the description of the method of making the distillation test for natural gasoline, vapor pressure method and the new motor fuel specifications. In addition, the committee will have charge of the publication of the convention proceedings, and papers. The following committee members have been appointed: A. V. Bourque, chairman; S. B. Crooks, Empire Gasoline Co.; George P. Bunn, Phillips Petroleum Co., and A. F. Wood, Chestnut & Smith Corp.

NEW GRAY COUNTY PLANT

The Forrest E. Gilmore Co. is building a 10,000-gallon natural gasoline plant in Section 163, Block 3, I.&G.N. Survey, in Gray County, West Texas, 5 miles east of Pampa. Additional units may be added later but production from the installation now being made is expected to start about November 15.

FIRST SKELLY COMPANY PLANE IN SERVICE



The Skelly Oil Co. has received one of several planes to be used by the company in sales work and others will be placed in general field work as needed. Skelly aviation gasoline, containing a large proportion of superstabilized natural gasoline, will be one of the products of the company to be featured in the plane's travel over the marketing territory of the company. The plane is a Spartan, manufactured by the Spartan Aircraft Co. of Tulsa. W. G. Skelly, president of the Skelly Oil Co., and C. C. Herndon, vice president, are shown in the picture here, at the side of the first of the planes to be placed in regular service.

A Practical Suggestion

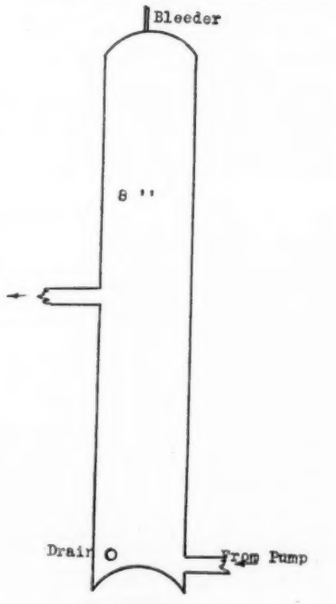
AIR CHAMBERS

In pumping absorption oil with direct acting power, crank and flywheel and rotary pump, there often develops periodical shocks and pulsations that sometimes become serious. The vibrations cause the connections to become loose and especially where there are open oil coils, leaks will develop and it is not an uncommon experience to find a cooling pit full of oil resulting from this cause.

The pump pulsations are due to gas working on the valves. When pumping denuded oil and this trouble is encountered, it will usually be found that pump is being operated too fast and is actualy pulling a vacuum on intake. Provided oil has been efficiently stripped, the gas will be found to be steam which has been transformed into its aeroform by reduced pressure or vacuum existing on the suction of pump.

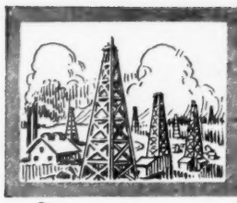
The object of an air or gas chamber is to provide an elastic element in the pipe line to take up the shocks and pulsations and produce a uniform flow in the pipe. The installation is usually made on the discharge line near pump, the entrapped gases forming a cushion and when gas compresses and expands it absorbs all the violent vibrations.

The air chamber found in several installations to eliminate this trouble, may be made by welding casing. It can be about six feet high with one connection at bottom and other about three feet higher. A drain and bleeder is also provided. It is important to use dished heads as the vibrations, even on a low pressure pump, are liable to cause leaks to develop in welds.



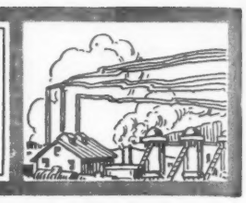
AIR CHAMBER

Practical suggestions by those connected with the construction and operations of natural gasoline plants are invited. Payment will be made as soon as suggestions are accepted. Address all communications to the Natural Gasoline Department, The Oil and Gas Journal, Tulsa.



REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.



GASOLINE AND NAPHTHA

OKLAHOMA (Group 3)—	Oct. 2		Sept. 25		Sept. 18	
50-52 450 endpoint	.08¾	.08¾	.08¾	.09	.09	.09¼
56-58 450 endpoint	.08¾	.08¾	.08¾	.09	.09	.09¼
58-60 450 endpoint	.09	.09¼	.09	.09¼	.09¼	
*58-60 437 endpoint (U. S. Motor)	.09725		.09695		.09747	
*60-62 437 endpoint	.09900		.09958		.09893	
*60-62 400 endpoint	.10125		.10158		.10438	
†64-66 375 endpoint	.10½	.10¾	.11000		.11000	
68-70 360 endpoint	.10½	.10¾	.10½		.10¾	.11
64-66 437 endpoint (blend)	.09¾		.09¾		.09¾	.10
NORTH TEXAS—						
56-58 450 endpoint	.08¾		.08¾		.08¾	.09
58-60 450 endpoint	.08¾		.08¾		.08⅞	.09
58-60 437 endpoint (U. S. Motor)	.09¼	.09½	.09¼	.09½	.09¼	.09¼
60-62 400 endpoint	.09½	.09⅝	.09½	.09⅝	.09⅝	.09¾
64-66 390 endpoint	.09⅝		.09⅝		.09¾	.10
64-66 375 endpoint	.09¾	.10	.09¾	.10	.10	.10¼
68-70 360 endpoint	.10¼		.10¼		.10½	.10⅝
64-66 437 endpoint (blend)	.09½		.09½		.09½	.09⅝
NORTH LOUISIANA—						
58-60 437 endpoint (U. S. Motor)	.09½	.09¾	.10	.10¼	.10	.10¼
ARKANSAS—						
58-60 437 endpoint (U. S. Motor)	.09½	.09¾	.09¾		.09¾	.10
PENNSYLVANIA—						
52-54 Naphtha	.11¼	.11½	.11¼	.11½	.11¾	.11½
54-56 Naphtha	.11½	.11¾	.11½	.11¾	.11½	.11¾
58-60 Gasoline	.11¾	.12	.11¾	.12	.11¾	.12
60 Gasoline	.12	.12¼	.12¾	.13	.12¾	.13
62 Gasoline	.12½	.12¾	.13	.13¼	.13	
64 Gasoline	.12¾	.13	.13½	.13¾		
CALIFORNIA—						
58-60 437 endpoint (U. S. Motor) domestic	.10	.11	.09½	.10	.09½	.10
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.09	.09¼	.09		.09⅛	.09¼
56-58 450 endpoint	.09		.09¼		.09⅛	.09¼
58-60 437 endpoint (U. S. Motor)	.09½		.09½	.09¾	.09½	.09⅝
60-62 400 endpoint	.10		.09⅞		.09¾	.10
64-66 375 endpoint	.10½	.10⅞	.10⅝		.10½	.11
68-70 360 endpoint	.11		.11		.11	.11¼
64-66 437 endpoint (blend)	.09¾	.09⅞	.09¾	.10	.09¾	.10

*Weighted average prices October 1 as reported by representative refiners. Sales to jobbers only. †General market; no prices reported.

NATURAL GASOLINE

OKLAHOMA (Group 3)—	Oct. 2		Sept. 25		Sept. 18	
Grade A, 72-79.9, 375 e.p., rec. 90%	.09½	.09¾	.10		.09¼	.09½
Grade AA, 80-87.9, 375 e.p., rec. 90%	.09½	.09⅝	.09⅞	.10	.09¼	
Grade B, 76-83.9, 375 e.p., rec. 85%	.09½		.09½	.09⅝	.09⅛	.09¼
Grade BB, 84-92, 375 e.p., rec. 85%	.09⅝	.09½	.09⅝	.09½	.09⅛	
Grade C, 80-90, 375 e.p., rec. 78%	.09⅜		.09¼		.08¾	.09
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.09½	.09¾	.09¾	.10	.09⅛	.09¼
Grade AA, 80-87.9, 375 e.p., rec. 90%	.09½		.09¾		.09⅛	.09¼
Grade B, 76-83.9, 375 e.p., rec. 85%	.09½		.09½		.09⅛	
Grade BB, 84-92, 375 e.p., rec. 85%	.09½		.09½		.09	
Grade C, 80-90, 375 e.p., rec. 78%	.09⅜		.09¼		.08¾	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.09⅝	.09¾	.10	.10⅛	.09¼	.09⅜
Grade BB, 84-92, 375 e.p., rec. 85%	.09⅝		.09½	.09⅝	.09¼	
Grade C, 80-92, 375 e.p., rec. 78%	.09½	.09⅝	.09⅝		.09	
CALIFORNIA—						
75-78 375-390 endpoint	.07¼	.07¾	.07	.07½	.07	.07½
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.09½	.09¾	.10		.09¼	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.09½		.09⅞	.10	.09¼	
Grade B, 76-83.9, 375 e.p., rec. 85%	.09½		.09¾		.09⅛	
Grade BB, 84-92, 375 e.p., rec. 85%	.09½		.09½		.09	.09⅛
Grade C, 80-90, 375 e.p., rec. 78%	.09⅜		.09¼		.08¾	.09

BURNING OIL

OKLAHOMA (Group 3)—	Oct. 2		Sept. 25		Sept. 18	
41-43 water white Kerosene	.06¼	.06½	.06¼	.06½	.06⅜	.06⅝
42-44 water white Kerosene	.06½	.06¾	.06⅝	.06¾	.06¾	
NORTH LOUISIANA—						
41-43 prime white Kerosene	.07		.07¼		.07¼	
NORTH TEXAS—						
41-43 water white Kerosene	.06	.06¼	.06	.06¼	.06⅛	
40-42 water white Kerosene	.05⅞	.06	.05⅞	.06	.06	
ARKANSAS—						
41-43 water white Kerosene	.07	.07¼	.07		.07	
PENNSYLVANIA—						
43 Kerosene prime white	.07½	.07¾	.07½	.07¾	.07½	.07¾
45 Kerosene water white	.07¾	.07⅞	.07¾	.08	.07¾	.08
46 Kerosene water white	.08	.08¼	.08	.08¼	.08	.08¼
47 Kerosene water white	.08⅛	.08¾	.08¼	.08½	.08¼	.08½
300 Mineral Seal	.07¼	.07½	.07¼	.07½	.07¼	.07½
CALIFORNIA—						
38-40 water white Kero. (high-burning test)	.06¾	.07¼	.06¾	.07¼	.06¾	.07¼
Engine distillate, 43-45 445 endpoint	.07½	.08	.06¾	.07¼	.06¾	.07¼
Engine distillate, 42-44 480 endpoint	.07	.07½	.06½	.06¾	.06½	.06¾
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white Kerosene	.06⅛	.06⅜	.06¼	.06½	.06¼	.06½
42-44 water white Kerosene	.06¾	.07	.06¾		.06¾	

FUEL OILS

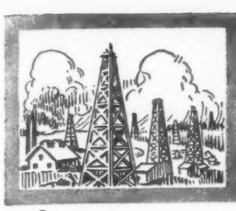
OKLAHOMA (Group 3)—	Oct. 2		Sept. 25		Sept. 18	
Below 18 Fuel Oil, per bbl.	.55	.60	.55	.60	.55	.60
18-22 Fuel Oil, per bbl.	.60	.65	.60	.65	.60	.65
22-26 Fuel Oil, per bbl.	.60		.60		.60	
24-26 Fuel Oil, per bbl.	.62½	.67½	.62½	.67½	.62½	.67½
26-30 Fuel Oil, per bbl.	.67½	.75	.67½	.75	.67½	.75
28-30 Fuel Oil, per bbl.	.80	.85	.80	.85	.80	.85
32-36 Gas Oil (dark)	.02½		.02½		.02½	
32-36 Gas Oil (straw distillate)	.02⅝		.02⅝		.02⅝	
36-38 Distillate	.02⅞	.03	.02⅞	.03	.02⅞	.03
38-40 Straw Distillate	.03⅛	.03¼	.03⅛	.03¼	.03⅛	.03¼
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars) per bbl.	.55	.60	.55	.60	.55	.60
32-36 Gas Oil (straw)	.02¼	.02⅜	.02¼	.02⅜	.02¼	.02⅜
38-40 Straw Distillate	.02⅞	.03	.02⅞	‡03	.02⅞	.03
NORTH LOUISIANA—						
18-20 Fuel Oil, per bbl.	.75	.80	.85		.82½	
32-36 Gas Oil	.02¾	.03¼	.03		.03	
ARKANSAS—						
33-36 Distillate	.03¼	.03⅜	.03¼	.03½	.03¼	.03½
32-36 Gas Oil (straw)	.02¾	.03	.02¾		.02¾	.03
16-22 Refinery Fuel Oil, per bbl.	.70	.75	.70	.75	.70	.75
GULF COAST (South Texas)—						
Gas Oil	.04⅛	.04¼	.04⅛	.04¼	.04⅛	.04¼
Bunker C Fuel, per bbl.	.75	.80	.75	.80	.75	.80
PENNSYLVANIA—						
30-34 Fuel Oil	.04¼	.04¼	.04¼	.04⅜	.04¼	.04⅜
36-40 Fuel Oil	.04¼	.04½	.04½	.04⅝	.04½	.04⅝
CALIFORNIA—						
33-36 Distillate	.03¾	.04	.03¾	.04	.03¾	.04
27-32 Distillate	.03	.03½	.03	.03½	.03	.03½
*15-20 Fuel Oil, Bunker (at tide water)	.85	1.00	.85	1.00	.85	1.00
15-20 Fuel Oil (cargo lots), per bbl.	.75	.85	.75	.85	.75	.85
27 plus Diesel, per bbl.	1.15	1.19	1.15	1.19	1.15	1.19
CHICAGO DISTRICT (Based on Group 3)—						
24-26 Fuel Oil, Group 3, bbl.	.65	.67½	.65	.67½	.65	.67½
22-26 Fuel Oil, Group 3, bbl.	.62½	.65	.62½	.65	.62½	.65
18-22 (Group 3), per bbl.	.55	.60	.55	.60	.55	.60
16-20 Smackover, per bbl.	.85	.87½	.85	.87½	.85	.87½
32-36 Gas Oil, zero	.02⅝	.03	.02⅝	.03	.02⅝	.03
32-36 Gas Oil (industrial)	.02½	.02⅝	.02½	.02⅝	.02½	.02⅝
36-38 Distillate	.03	.03⅛	.03	.03⅛	.03	.03⅛
38-40 Straw Distillate	.03⅛	.03¼	.03⅛	.03¼	.03⅛	.03¼

*Bunker.

LUBRICATING OIL AND WAX

OKLAHOMA (Group 3)—	Oct. 2		Sept. 25		Sept. 18	
100 vis., 2 color, 20-25 cold test	.06¼	.06½	.06¼	.06½	.06¼	.06½
100 vis., 3 color, 20-25 cold test	.06	.06¼	.06	.06¼	.06	.06¼
150 vis., 3 color, 20-25 cold test	.08¼	.08½	.08¼	.08½	.08¼	.08½
150 vis., 4 color, 20-25 cold test	.08	.08¼	.08	.08¼	.08	.08¼
180 vis., 3 color, 23-28 cold test	.09⅜	.10	.09⅜	.10	.09⅜	.10
180 vis., 4 color, 23-28 cold test	.09¼	.09¾	.09¼	.09¾	.09¼	.09¾
180 vis., 5 color, 23-28 cold test	.09¼	.09½	.09¼	.09½	.09¼	.09½
200 vis., 3 color, 23-28 cold test	.09½	.10½	.09¼	.10½	.09½	.10½
200 vis., 4 color, 23-28 cold test	.09⅜	.10¼	.09⅜	.10¼	.09⅜	.10¼
200 vis., 5 color, 23-28 cold test	.09¼	.10	.09¼	.10	.09¼	.10
240 vis., 3 color, 25-30 cold test	.13¾	.14	.13¾	.14	.13¾	.14
240 vis., 4 color, 25-30 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
240 vis., 5 color, 25-30 cold test	.12¼	.12½	.12¼	.12½	.12¼	.12½
280 vis., 3 color, 25-30 cold test	.15½	.16	.15½	.16	.15½	.16
280 vis., 4 color, 25-30 cold test	.15	.15½	.15	.15¼	.15	.15½
280 vis., 5 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
Cylinder Stocks:						
600, steam refined, light green	.08	.09	.08	.09	.08	.09
600, steam refined, dark green	.06	.06½	.06	.06½	.06	.06½
190-200 vis. @ 210 Bright Stock	.29	.30	.29	.30	.29	.30
150-160 vis. @ 210 Bright Stock	.25		.25		.25	
Waxes:						
124-126 White Crude Scale Wax	.05	.05⅛	.05	.05⅛	.05	
PENNSYLVANIA—						
34 Neutral	.07½	.07¾	.07¾	.08	.07¾	.08
34 Sundebloom	.08¼	.08½	.07¾	.08	.07¾	.08
36 Miners' Neutral	.07	.07½	.07½	.08	.08	.08½
150, 3 color	.23	.23½	.23	.23½	.23½	.24
180, 3 color	.28	.28½	.28	.28½	.28½	.29
200, 3 color	.29½	.30	.29½	.30	.31½	.32
220, 3 color	.32½	.33	.32½	.33	.32½	.33
600, steam refined	.13	.13½	.13	.13½	.12½	.13
635, steam refined	.13½	.14	.13½	.14	.13	.13½
650, steam refined	.15	.15½	.15	.15¼	.15	.15¼
600, Pennsylvania flash	.19	.19½	.19	.19½	.19	.19½
*550, E filtered	.15	.15½	.15	.15½	.15	.15½
*600, E filtered	.19	.19½	.19	.19½	.19	.19½
600, E filtered	.18	.18½	.18	.18½	.18	.18½
600, D filtered	.23¾	.24	.23¾	.24	.23¾	.24
550, E filtered	.15½	.16	.15½	.16	.15½	.16
550, D filtered	.21½	.22	.21½	.22	.21½	.22
Pennsylvania Bright Stock	.36	.36½	.36	.36½	.36	.36¾
†122-124 White Crude Scale Wax	.05½	.05⅝	.05¼	.05½	.05¼	.05½
†124-126 White Crude Scale Wax	.05½	.05¾	.05½	.05¾	.05½	.05¾
GULF COAST (South Texas)—						
No. 2 color, 100 vis., pale oil	.07¼	.07½	.07¼	.07½	.07¼	.07½
No. 3 color, 200 vis., pale oil	.08½	.09	.08½	.09	.08½	.09
No. 3 color, 300 vis., pale oil	.11	.11½	.11	.11½	.11	.11½
No. 3½ color, 500 vis., pale oil	.12½	.13	.12½	.13	.12½	.13
No. 4 color, 750 vis., pale oil	.15	.15½	.15	.15½	.15	.15½
No. 5 to 6 color, 200 vis., red oil	.08¼	.08½	.08¼	.08½	.08¼	.08½
No. 5 to 6 color, 300 vis., red oil	.09¼	.09½	.09¼	.09½	.09¼	.09½
No. 5 to 6 color, 500 vis., red oil	.10½	.11½	.10½	.11½	.10½	.11½
No. 5 to 6 color, 750 vis., red oil	.13¼	.14	.13¼	.14	.13¼	.14
No. 2½ color, 200 vis., pale filtered	.11¾	.12¼	.11¾	.12¼	.11¾	.12¼
No. 2½ color, 300 vis., pale filtered	.13½		.13½		.13½	
No. 2½ color, 500 vis., pale filtered	.15½	.16	.15½	.16	.15½	.16
No. 2½-3 color, 750 vis., pale filtered	.18	.20	.18	.20	.18	.20
CALIFORNIA—						
130 vis., 2½-3 color	.10¼	.11	.10¼	.11	.10¼	.11
200 vis., 2½-3 color	.11½	.12	.11½	.12	.11½	.12
300 vis., 3-3½ color	.13	.13½	.13	.13½	.13	.13½

*At Warren, Pa. †At New York.



REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

350 vis., 3½-4 color	.13¼	.14	.13¼	.14	.13¼	.14
400 vis., 3½-4 color	.15	.16	.15	.16	.15	.16
Red Neutral:						
200 vis., 4½-5 color	.11½	.11¾	.10½	.11½	.10½	.11½
300 vis., 5-6 color	.11¾	.12½	.11¼	.12¼	.11¼	.12¼
400 vis., 5-6 color	.13½	.14½	.13	.14	.13	.14
500 vis., 4½-5 color	.15	.15½	.15	.15½	.15	.15½
500 vis., 5-6½ color	.15¼	.15¾	.15¼	.15¾	.15¼	.15¾
600 vis., 6½ plus color	.15½	.16	.15½	.16	.15½	.16

Note: Bright stocks are not manufactured commercially on the Pacific Coast

NEW YORK (BAYONNE) REFINERY PRICES

	Oct. 2	Sept. 25	Sept. 18
Gasoline, U. S. Motor, 58-60 437	.11¾	.11¾	.11¾
Kerosene, water white, 41-43	.09	.08½	.08½
*Fuel Oil, bunker "C," 14-16, per bbl.	1.05	1.05	1.05
†Fuel Oil, Diesel, 28-30, per bbl.	2.00	2.00	2.00
Gas Oil, 32-36 gravity	.05¼	.05¼	.05¼
25 Pale Paraffin Oil	.11¾	.11¾	.11¾
28 pale Paraffin Oil	.07	.07	.07
285 red Paraffin Oil	.11½	.11½	.11½
250 red Paraffin Oil	.10½	.10½	.10½
225 red Paraffin Oil	.09½	.09½	.09½
200 red Paraffin Oil	.09	.09	.09
Refined Wax:			
120-122 a.m.p., per lb.	.05½	.05¾	.05¾
125-127 a.m.p., per lb.	.05¾	.06	.06
130-132 a.m.p., per lb.	.06½	.06¾	.06¾
133-135 a.m.p., per lb.	.07¼	.07½	.07½
135-137 a.m.p., per lb.	.07¾	.07¾	.07¾
Petrolatum, in bbls., carload lots, per lb.:			
Dark green	.02	.02	.02
Amber	.03½	.03½	.03½
Extra amber	.03¾	.03¾	.03¾
Cream	.06¼	.06¼	.06¼
Lily white	.07¼	.07¼	.07¼
Snow white	.08¼	.08¼	.08¼

*Lighterage, 5.0c a barrel extra. †Lighterage, 6.5c a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	Oct. 2	Sept. 25	Sept. 18
Gasoline, U. S. Motor, 58-60, 437, in cases	.2690	.2690	.2690
Kerosene, standard white, in cases	.1740	.1740	.1740
Kerosene, water white, in cases	.1865	.1865	.1865
600, steam refined cylinder stocks, in bbls.	.20	.20	.20½
635, steam refined	.21	.21	.21½
650, steam refined	.23	.23	.23
600, Pennsylvania flash	.26	.26	.26
630, Pennsylvania flash	.34½	.34½	.34½
600, Warren E	.26	.26	.26
600, Oil City E	.25	.25	.25
Light 140-150 Bright Stock	.44	.44	.44½
Dark 140-150 Bright Stock	.42	.42	.42½

LOS ANGELES EXPORT PRICES

	Oct. 2		Sept. 25		Sept. 18	
Kerosene, water white	.05¾	.06¼	.05¾	.06¼	.05¾	.06¼
U. S. Motor Gasoline, 53-55, 437 e.p.	.08½	.09	.08½	.09	.08½	.09

CALIFORNIA CRUDE OIL PRICES

Standard Oil Co.-Union Oil Co. (Effective August 15, 1928)*

Gravity—	Richfield Torrance Olinda-Brea Alamitos Hts. Signal Hill Seal Beach Huntington Beach Athens-Rosecrans-Dom'guez Inglewood 1	Whittier Fullerton Coyote Hills 2	Kern River Newhall-McKittrick Midway-Sunset Elk Hills Lost Hills Buena Vista Hills 3	Montebello 4	Santa Fe Springs 5	Coalinga 6	Wheeler Ridge 7	Orcutt 8	Ventura 9
14 to 14.9	.85	.85	.75	.85	....	.75	.75	.85	.85
15 to 15.9	.85	.85	.75	.85	....	.75	.75	.85	.85
16 to 16.9	.85	.85	.75	.85	....	.75	.75	.85	.85
17 to 17.9	.85	.85	.75	.85	....	.75	.75	.85	.85
18 to 18.9	.85	.85	.75	.85	....	.75	.75	.85	.85
19 to 19.9	.85	.85	.75	.85	....	.75	.75	.85	.85
20 to 20.9	.85	.85	.77	.86	....	.77	.77	.85	.85
21 to 21.9	.89	.88	.79	.89	.89	.79	.79	.86	.86
22 to 22.9	.93	.91	.82	.92	.92	.82	.82	.87	.87
23 to 23.9	.97	.94	.86	.95	.95	.85	.85	.90	.90
24 to 24.9	1.01	.97	.90	.98	.98	.88	.88	.92	.94
25 to 25.9	1.05	1.00	.95	1.01	1.01	.91	.91	.95	.98
26 to 26.9	1.09	1.04	1.00	1.04	1.04	.94	.94	.97	1.02
27 to 27.9	1.13	1.08	1.05	1.07	1.07	.98	.97	....	1.06
28 to 28.9	1.17	1.12	1.10	1.10	1.10	1.02	....	....	1.10
29 to 29.9	1.21	1.16	1.16	1.13	1.15	1.06	....	....	1.14
30 to 30.9	1.25	1.20	1.22	1.16	1.20	1.10	....	....	1.18
31 to 31.9	1.30	....	1.28	....	1.25	1.14	....	....	1.23
32 to 32.9	1.35	....	1.34	....	1.30	1.18	....	....	1.28
33 to 33.9	1.41	....	1.40	....	1.35	1.22	....	....	....
34 to 34.9	1.47	....	1.46	....	1.40	1.26	....	....	....
35 to 35.9	1.53	....	....	....	1.45	1.30	....	....	....
36 to 36.9	1.59	....	....	....	1.50	....	....	....	....
37 to 37.9	1.65	....	....	....	1.55	....	....	....	....
38 to 38.9	1.71	....	....	....	1.60	....	....	....	....
39 to 39.9	1.77	....	....	....	1.65	....	....	....	....
40 to 40.9	1.83	....	....	....	....	....	....	....	....
41 to 41.9	1.89	....	....	....	....	....	....	....	....
42 to 42.9	1.95	....	....	....	....	....	....	....	....

*Column 1—Signal Hill, Seal Beach, Huntington Beach and Alamitos Heights crude, 14 to 32.9 gravity, inclusive; Richfield, Olinda-Brea and Fullerton, 14 to 30.9 gravity; Torrance and Inglewood, 14 to 28.9 gravity; Dominguez and Athens-Rosecrans, 24 to 42.9 gravity.
Column 2—Whittier crude, 14 to 22.9 gravity; Coyote Hills, 14 to 30.9 gravity.
Column 3—Kern River, Newhall and McKittrick, 14 to 19.9 gravity; Midway-Sunset, Buena Vista and Elk Hills, 14 to 33.9 gravity; Lost Hills, 14 to 34.9 gravity.
Columns 8 and 9 posted by Union Oil Co. only.

CRUDE OIL GRAVITY TABLE

Gravity—	Okla., Kans. N. C. Tex. 1	No. La. and Arkansas 2	Smackover, Ark. 3	Stephens, Ark. 4	Gray County (Texas Panhandle) 5	Salt Creek, Wyo. 6	Grade B & Light Crude (G. Coast) 7	Somerset (South Central Texas) 8
24 and above	....	....	.90	....	....	....	....	....
Below 24	....	....	.75	....	....	....	....	....
Below 25	.60	....	....	....	....	....	1.15	....
25 to 25.9	.67	....	....	....	....	....	....	....
Below 26	....	....	....	....	....	....	....	....
26 to 26.9	.74	....	....	....	....	....	1.19	....
27 to 27.9	.81	....	....	....	....	....	1.21	....
Below 28	....	.81	....	.75	.68	....	....	....
28 to 28.9	.88	.88	....	.77	.68	....	1.23	....
29 to 29.9	.95	.95	....	.79	.75	.95	1.25	....
30 to 30.9	1.02	1.02	....	.81	.82	1.02	1.27	....
31 to 31.9	1.09	1.09	....	.83	.89	1.09	1.29	....
32 to 32.9	1.16	1.16	....	.85	.96	1.16	1.31	1.05
33 to 33.9	1.21	1.21	....	....	1.01	1.21	1.33	1.07
34 to 34.9	1.26	1.26	....	....	1.06	1.26	1.35	1.09
35 to 35.9	1.31	1.31	....	....	1.11	1.31	1.37	1.11
36 to 36.9	1.36	1.36	....	....	1.16	1.36	....	1.13
37 to 37.9	1.41	1.41	....	....	1.21	1.41	....	1.16
38 to 38.9	1.46	1.46	....	....	1.26	....	....	1.17
39 to 39.9	1.51	1.51	....	....	1.31	....	....	....
40 to 40.9	1.56	1.56	....	....	1.36	....	....	....
41 to 41.9	1.61	1.61	....	....	1.41	....	....	....
42 to 42.9	1.66	1.66	....	....	1.46	....	....	....
43 to 43.9	1.71	1.71	....	....	1.51	....	....	....
44 and above	1.76	1.76	....	....	1.56	....	....	....

Column 1—Magnolia Petroleum Co. posted schedule August 2, 1928, making price below 25 gravity 60 cents per barrel, 25-25.9 gravity 67 cents, 26-26.9 gravity 74 cents, and 27-27.9 gravity 75 cents, 30-30.9, 90 cents, and 31-31.9, $1.05, with balance of the price schedule as shown.
Oklahoma—Prairie Oil & Gas Co., Sinclair Oil & Gas Co., Gypsy Oil Co., Carter Oil Co., The Texas Company, July 26.
North Central Texas—[Including Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs (Southwest Texas), Iatan and Panola (Iatan posted at flat price of 93 cents by Magnolia on January 14, 1928).] Currie, Nocona and Moran, Prairie, Sinclair and Gulf; The Texas Company, Humble Oil & Refining Co., July 26.
Kansas—Prairie, Sinclair; Carter, The Texas Company, July 26.
Column 2—Arkansas and North Louisiana—[Caddo, Bull Bayou, Crichton, De Soto, Haynesville, Homer and El Dorado only], Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., and Gulf Refining Co., August 2. Magnolia Petroleum Co. schedule effective August 7 applies to Pine Island, Haynesville, Bull Bayou, Louisiana, and El Dorado, Ark., light crude. The Texas Company August 8 posted prices below 28 gravity at 7 cents differential per degree with minimum of 60 cents for all below 25 gravity.
Column 3—February 6, Louisiana Oil Refining Co. February 7, Standard Oil Co. of Louisiana, The Texas Company, Gulf Refining Co., Magnolia Petroleum Co. February 8, and on February 10, Atlantic Production Co.
Column 4—Atlantic Oil Producing Co., Louisiana Oil Refining Corp., August 3.
Column 5—Humble Oil & Refining Co., July 26.
Column 6—Midwest Refining Co., July 26. All crude over 37 gravity, $1.41 per barrel.
Column 7—Humble Oil & Refining Co. and other major buyers (schedule ends 26 and above), March 14, with exception of Magnolia Petroleum Co., which stops at 31 degrees gravity. Sun Pipe Line Co. and The Texas Company posted 2 cents differential for each degree above 35 gravity and $1.47 for 40 gravity and above.
Column 8—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., April 7.

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Corsicana heavy (March 14, 1927)*....$1.00
Other fields.....See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE
Carson and Hutchinson

Below 32 gravity	$ .69
32-32.9	.76
33-33.9	.81
34-34.9	.86
35-35.9	.91
36-36.9	.96
37-37.9	1.01
38-38.9	1.06
39-39.9	1.11
40-40.9	1.16
41-41.9	1.21
42-42.9	1.26
43-43.9	1.31
44 and above	1.36

Wheeler County

Below 30 gravity	$ .65
30-30.9	.72
31-31.9	.79
32-32.9	.86
33-33.9	.91
34-34.9	.96
35-35.9	1.01
36-36.9	1.06
37-37.9	1.11
38-38.9	1.16
39-39.9	1.21
40-40.9	1.26
41.41.9	1.31
42-42.9	1.36
43-43.9	1.41
44 and above	1.46
Gray County	See gravity table

Humble Oil & Refining Co. and Magnolia Petroleum Co., July 26.

Iatan*.....Same as North Texas
Crane-Upton-Crockett, Pecos, Winkler and Glasscock (July 26)†.....$ .65
Chalk†.....$0

*Includes Howard County and Westbrook Fields. Marland Refining Co. pays $1.05 for Howard County crude, effective May 21.
†Magnolia Petroleum Co., January 14, 1928.
‡Posted by Humble Oil & Refining Co., Magnolia Petroleum Co. and Gulf Pipe Line Co.

ARKANSAS-NORTH LOUISIANA

Cotton Valley (Below 36 gravity April 11).....$ .75
Bellevue (Feb. 27, 1927).....1.25
Urania (July 17, 1928).....85
East El Dorado (March 16, 1927).....1.00
Other fields.....See gravity table

*Cotton Valley crude above 36 gravity takes same gravity price schedule as shown for North Louisiana and Arkansas crude in Mid-Continent gravity price table.
Note—Cotton Valley and Bellevue, Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., Gulf Refining Co. and Magnolia Petroleum Co.; (Magnolia Petroleum Co. posted Cotton Valley February 8); Urania, Louisiana Oil Refining Corp.; East El Dorado, Magnolia Petroleum Co., Gulf Refining Co.

GULF COAST

(Goose Creek, Hull, Liberty, West Columbia, Orange, Boling, Sour Lake, Humble, High Island, Pierce Junction and Spindletop.)

Grade A (March 14)*.....$1.20
Grade B.....See gravity table
Jennings, La. (March 14)†.....$1.05
Saratoga, Batson, Daytona (March 14, 1927)‡.....1.20
Markham (March 14)§.....1.00

*Humble Oil & Refining Co. and other major buyers. †Gulf Pipe Line Co. ‡Sun Pipe Line Co. §The Texas Company.

SOUTH CENTRAL AND SOUTH-WESTERN TEXAS

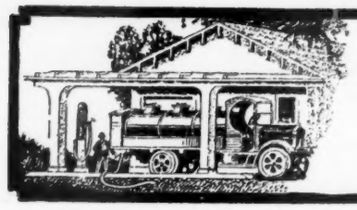
Luling (May 5)*.....$1.00
Mirando (March 14)†.....1.00
Rockdale-Minerva (April 15):
Below 38 gravity.....1.25
38-38.9 gravity.....1.27
39-39.9 gravity.....1.29
40 and above.....1.31
Thrall‡.....
Callihan (May 15).....1.75
Lytton Springs (Lockhart).See gravity table
Somerset.....See gravity table

*Posted by Magnolia Petroleum. Thrall prices same as North Central Texas less 19½ cents per cwt. freight.
†Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co.

ROCKY MOUNTAIN STATES
Ohio Oil Co.-Midwest Refining Co.
(Effective July 27, 1928)

Rock Creek, Wyo.....$1.33
Salt Creek.....See gravity table

(Continued on Page 126)



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the leading marketing concerns Oct. 2.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago dist.	15.9	17.0	...	12.6
Decatur, Ill.	15.2	17.2	...	12.1
East St. Louis	14.4	16.4	...	11.2
Joliet	15.4	17.4	...	12.3
Peoria	15.2	17.2	...	12.1
Quincy	15.2	17.2	...	11.9
Davenport, Ia.	18.5	20.5	3.0	12.3
Des Moines	18.5	20.5	3.0	12.3
Keokuk	18.5	20.5	3.0	12.3
Sioux City	18.1	20.1	3.0	11.9
Duluth, Minn.	18.5	20.5	2.0	12.9
Mankato	18.1	20.1	2.0	12.7
Minneapolis	18.2	20.2	2.0	12.9
La Crosse, Wis.	18.2	20.2	2.0	13.0
Milwaukee	17.1	19.1	2.0	11.9
Madison	17.3	19.3	2.0	12.1
Detroit, Mich.	18.8	20.8	3.0	13.7
Grand Rapids	18.7	20.7	3.0	13.6
Saginaw	18.9	20.9	3.0	13.8
Evansville, Ind.	18.0	20.0	3.0	13.0
Fort Wayne	18.4	20.4	3.0	13.4
Indianapolis	18.2	20.2	3.0	13.2
South Bend	18.4	20.4	3.0	13.4
Fargo, N. D.	19.9	21.9	2.0	14.9
Huron, S. D.	20.3	22.3	4.0	13.7
Sioux Falls	19.1	21.1	4.0	13.4
K. C., Mo.*	17.9	19.9	3.0	10.6
Springfield*	17.8	19.8	3.0	11.5
St. Louis*	16.9	18.9	2.5	11.3
St. Joseph*	17.5	19.5	3.0	11.2
Wichita, Kans.	15.8	17.8	2.0	10.8
Bartlesville, Okl.	16.5	18.5	3.0	10.5

*State tax 2 cents: remainder city tax.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	14.7	12.9
V. M. & P. naphtha	16.2	13.9
Cleaner's naphtha	18.0	14.9
Stanisol	19.0	15.4

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

Less than 100 gallons	9.0
100 to 799 gallons	8.0
800 or more gallons	7.5

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

The following quantity discounts from the service station price are allowed on monthly sales of gasoline: 2,000 gallons or less, 2 cents; more than 2,000 and less than 6,000 gallons, 2½ cents; more than 6,000 gallons, 3 cents. Discounts are allowed each month, and they are not cumulative. Delivery tickets showing date and quantity delivered must be sent to the seller before the tenth of the month to secure the discount on the previous month's purchases.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.*

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex.	16 0	20 0	2 0	11.0
Fort Worth	16 0	19 0	2 0	11 0
Houston	16 0	20 0	2 0	15 0
San Antonio	14.0	17 0	2 0	10 0
El Paso	17 0	20 0	2 0	16 0
Texarkana	16 5	20 5	2.0	12 0
Muskogee, Ok.	18.0	20.0	3.0	11.0
Okla. City	18.0	20 0	3 0	11 0
Tusla	17 0	19 0	3.0	11 0
Ft. Smith, Ark.	19 0	21 0	3 0	12 0
Little Rock	21.0	23 0	5.0	12.0

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	17.25	19.25	2.0	12.25
McCook	18.75	20.75	2.0	13.75
Norfolk	17.75	19.75	2.0	12.75
N. Platte	18.75	20.50	2.0	13.50
Scotsbluff	18.75	20.75	2.0	13.25

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo.	19.0	22.0	3.0	14.5
Pueblo	19.0	22.0	3.0	14.5
Grand Junction	22.5	25.5	3.0	18.0
Casper, Wyo.	19.0	22.0	3.0	13.0
Cheyenne	20.0	23.0	3.0	14.5
Butte, Mont.	23.5	26.5	3.0	19.0
Helena	23.5	26.5	3.0	19.0
Salt Lake, Utah	22.0	25.0	3.5	17.0
Albu'que, N. M.	23.0	25.0	5.0	17.0
Boise, Idaho	*4.5	27.5	4.0	19.0
Twin Falls	24.5	27.5	4.0	19.0

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga.	22 0	24.0	4.0	16 5
Augusta	22 0	24 0	4 0	15 5
Macon	22.0	24.0	4 0	16 5
Savannah	21 0	21 0	4 0	14.5
Birm'ham, Ala.	20 0	22 0	4 0	14.0
Mobile	22 0	24 0	4.0	15 0
Montgomery	23 0	25 0	4 0	16 5
Clarks'le, Miss.	21.0	23.0	4.0	13.0
Jackson	21.0	23.0	4.0	14.5
Natchez	20.5	22.5	4.0	14.0
Gulfport	22.5	24.5	4.0	14.0
Vicksburg	20.5	22.5	4.0	14.0
Jack'ville, Fla.*	22.0	24.0	5.0	13.5
Miama*	23.0	25.0	5.0	15.5
Pensacola*	23.0	25.0	5.0	13.5
Tampa	22.0	24.0	5.0	13.5
Lexington, Ky.	21.0	23.0	5.0	15.5
Covington	22.0	22.0	5.0	15.5
Louisville	21 0	23 0	5 0	15 0

*Note—Florida station prices have been 2 cents above tank wagon prices in respective points since July 30 as shown above.

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene only. Pensacola tax includes 1-cent city levy. Gulfport tax includes privilege tax of 2 cents in addition to state tax.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlantic City	18.0	20.0	2.0	14.0
Newark, N. J.	18.0	20.0	2.0	14.0
Annapolis, Md.	21 0	23 0	4 0	14.0
Baltimore	21.0	23.0	4.0	11.0
Cumberland	21 0	23 0	4 0	14 0
Washington	19 0	21 0	2 0	14.0
Danville, Va.	22 0	....	5 0	14 0
Norfolk	19 0	20 0	5 0	14 0
Petersburg	22 0	24 0	5 0	14 0
Roanoke	22.0	24.0	5 0	14 0
Richmond	22 0	24 0	5 0	14 0
Ch'rlst'n, W. V.	21 0	23 0	4 0	14 0
Keyser	21.0	23 0	4 0	14 0
Parkersburg	21 0	23 0	4 0	14.0
Wheeling	21.0	23 0	4 0	14 0
Charlotte, N. C.	21 0	23 0	4 0	14 0
Hickory	21 0	23 0	4 0	14 0
Ht. Airy	21.0	23 0	4 0	14 0
Salisbury	21.0	23 0	4.0	14 0
Charleston, S.C.	22 0	24 0	5 0	14 0
Columbia	22.0	24 0	5.0	14.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y.	18.0	20.0	...	15.0
New York*	18.0	20.0	...	15.0
Buffalo	18.0	20.0	...	14.0
Rochester	18.0	20.0	...	14.0
Syracuse	18.0	20.0	...	15.0
Boston, Mass.	18.0	20.0	...	15.0
Augusta, Me.	22 0	24 0	4 0	15 0
Manch't'r, N.H.	22 0	24 0	4 0	15 0
Burlington, Vt.	21.0	23.0	3.0	15.0

*Prices in steel barrels.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
N. Orleans, La.*	17.5	19.5	3.0	16.0
Baton Rouge	16.0	18.0	2.0	14.5
Alexandria	17.0	19.0	2.0	16.0
LaFayette	17.0	19.0	2.0	15.5
Lake Charles	17.5	19.5	2.0	16.0
Shreveport	17.5	19.5	2.0	15.0
Knoxv'le, Tenn.	21 0	21 0	3 0	16 0
Memphis	19 0	21.0	3 0	15 0
Chattanooga	20.5	22.5	3.0	16.0
Nashville	20.0	22.0	3.0	16.0
Bristol	21.0	23.0	3.0	15.0
Lit. Rock, Ark.	21.0	23.0	5.0	14.0

*Tax of 3 cents includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax and 1-cent parish tax.

PACIFIC COAST TERRITORY

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
San Francisco	17.0	21.0	3.0	15.5
Los Angeles	16.5	20.5	3.0	15.5
Reno, Nev.	22.0	26.0	4.0	19.0
Portland, Ore.	17.5	21.5	3.0	16.5
Seattle, Wash.	16.5	20.5	3.0	16.5
Tacoma	16.5	20.5	3.0	16.5
Spokane	20.5	24.5	3.0	20.5
Phoenix, Ariz.	18.0	22.0	4.0	20.5

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

The Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	17 0	*22 0	...	15 0
Philadelphia	17 0	*22 0	...	15 0
Scranton	17 0	*22 0	...	15.0
Allentown	17 0	*22 0	..	15 0
Altoona	17 0	*22 0	..	15 0
Erie	17 0	*22 0	...	15.0
Dover, Del.	20 0	22 0	3 0	15 0
Wilmington	20.0	22 0	3 0	15 0
Springf'd, Mass.	18.0	20.0	...	15.0
Worcester	18.0	20.0	...	15.0
Boston	18.0	20.0	...	15.0
Providence, R.I.	20.0	22.0	2.0	15.0
Hartford, Conn.	20.0	22.0	2.0	14.0
New Haven	20.0	22.0	2.0	15.0

*Includes tax of 3.0 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the State.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
All Ohio points	19.0	20.0	3.0	14.5

TANK WAGON CHANGES

October 1—Standard Oil Co. of Louisiana advanced the gasoline tank wagon and station prices 1 cent in Memphis, Tenn., to 19.0 and 21.0 cents.

CRUDE PRICE CHANGES

October 1—Stoll Oil Refining Co. increased the crude held in their Oil City, Ky., lines 10 cents per barrel to $1.75.

GULF COAST MARKET REPORTED FAIRLY FIRM

HOUSTON, Tex., Oct. 1.—The substantial increase in sale of Gulf Coast lubricating oils expected the first of October so far has failed to materialize, but the general situation continues fairly firm in the face of some reported scattered cutting of prices. Several sellers Tuesday reported business improved but others found only the routine orders which have marked the past month.

Movement of Gulf Coast lubs the past week has been hampered at some plants by the shortage of small compartment cars, the latter cars having been in greater demand for several months in view of the trend of jobbers toward buying in smaller lots to prevent tying up too great an amount of money at a time. A few fair-sized contracts for winter material are being made but even this business is coming in later than usual. Export inquiries continued slow. Fuel oil and gas oil were unchanged.

NEW RAILROAD IN WINKLER

Texas & Pacific, through the Texas-New Mexico Railway, will construct 38½ miles of main line, instead of 32 miles, commencing with a connection on its line at Monahans, Ward County, Texas, to Kermit, Winkler County, and from there northward to the Texas-New Mexico State line, including a 3½-mile branch serving the town of Wink, as was suggested by the Interstate Commerce Commission.

HILL WITH JERSEY COMPANY

In the September 20 issue of The Oil and Gas Journal it was stated Harry H. Hill had resigned from the Bureau of Mines to become associated with the Standard Oil Co. of New York. This was in error to the extent the company named should have been the Standard Oil Co. of New Jersey.

OMAHA VOTES DOWN NATURAL GAS BONDS

OMAHA, Neb., Sept. 29.—A referendum vote defeated the proposal to issue bonds to pay for extensions and improvements to municipal gas distributing system so that it could take care of natural gas in Omaha. The vote was approximately 31,000 against the proposal to 7,000 in favor.

The bond issue would have amounted to approximately $1,500,000 and permitted the Utilities District Commission to make the necessary changes in the distributing system. The commission already has made a contract with The Texas Corporation-Skelly Oil-Columbian Carbon interests to purchase the gas. The group of companies would lay a trunk pipe line from their properties in the Texas Panhandle to Omaha to deliver gas at the city gate to the commission.

It is not yet definitely decided whether some other means of making improvements to the delivery system will be found by the commission in order to carry out the contract to serve Omaha with natural gas.

CHAIRMAN JONES RECOVERING

George H. Jones, chairman of the board of directors of the Standard Oil Co. of New Jersey, recently underwent an operation in a New York City hospital and is reported to be "getting along fine" following the operation.

CRUDE OIL PRICES

(Continued from Page 125)

Big Muddy	1.33
Grass Creek, heavy	.90
Grass Creek, light	1.48
Mule Creek (May 1)	1.10
Elk Basin	1.48
Lance Creek	1.48
Poison Spider (March 14, 1927)	1.00
Notches (March 14, 1927)	.65
Rex Lake (February 22)	1.10
Osage	1.48
Lost Soldier (contract)	.90
Hamilton Dome (March 14, 1927)	.85
Greybull-Torchlight	1.48
Cat Creek (Montana)	1.48
Sun'urst (Montana) (May 18, 1928)	1.68
Artesia	1.08
Hogback (New Mexico)	1.48

Note—Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

EASTERN STATES

Joseph Seep Purchasing Agency
(Effective Sept. 14, 1928)

Penna Grade Oil in New York Transit Lines (New York)	$3.35
Bradford District Oil in National Transit Lines (Pennsylvania)	3.35
Penna Grade Oil in National Transit Lines (Pennsylvania)	3.25
Penna Crude Oil in Southwest Pennsylvania Lines (West Virginia)	3.25
Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	3.15
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	3.00
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (July 13)	1.45
Corning 35-cent Grade Oil in Buckeye Pipe Line Co.'s lines (August 8)	1.70
Corning 25-cent Grade Oil in Buckeye Pipe Line Co.'s lines (Aug. 8)	1.80
Somerset Oil in Cumberland Pipe Line lines (Kentucky) (Sept. 14, 1928)	1.75
Ragland Grade Oil in Cumberland Pipe Line lines (Kentucky) (August 1)	.90

MIDDLE WESTERN STATES

Ohio Oil Co.
(Effective July 27, 1928)

Lima	$1.60
Wooster	1.60
Illinois	1.50
Indiana	1.35
Princeton	1.50
Plymouth	1.25
Waterloo (November 17, 1926)	1.30
Western Kentucky* (Sept. 17, 1928)	1.60
Saginaw, Mich., Saginaw Sand (February 10)†	1.85
Saginaw, Mich., Berea Sand (February 10)†	1.75
Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (March 16)‡	1.50
Oil in lines of Stoll Oil Refining Co. in Oil City, Ky. (Oct. 1, 1928)§	1.75
Oil Springs (Canada)¶	2.07
Petrolia (Canada)¶	2.06

*Posted by Ohio Oil Co.
†Posted by Sun Oil Co.
‡Posted by Paragon Development Co.
§Posted by Stoll Oil Refining Co.
¶Posted by Imperial O.l Co., Ltd.

MEXICAN CRUDE

Panuco heavy (f.o.b. Mexican ports)	$1.15

Note—Due to the fact that the exportation of Tuxpam light crude has become a negligible factor, prices will no longer be published.

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Quiet Week in Petroleum Securities

Pan American Petroleum & Transport Most Active. Imperial Reaches New High. Phillips Active Through Week

The oils experienced a rather quiet week, the most active issues being Pan American Petroleum & Transport which again reached the level of 50, and Imperial Oil of Canada which touched a new high for 1928 when it sold at 82. The buying in Imperial was reported to be in the hands of those who were in the market for investment purposes only, and consequently the stock would be put away.

Phillips Petroleum was active through the week, and sold as high as 45 which is another new peak for a member of the oil group. Phillips did react slightly, and lost most of its gain on Monday. Independent Oil & Gas which has been showing some strength was in good supply on Monday and closed at 29⅞.

The regular Salt Creek Producers dividend of 75 cents per quarter was declared on Monday of this week and will be payable November 15 to stockholders of record October 15.

Another advance in the rate of call money was made on Monday afternoon and the market closed with 10 per cent money. This move checked the activity slightly, and there was no announcement of any substantial offerings of additional funds at this attractive rate, but the high rate was established towards the close of the market, which gave outside funds only a limited time to take advantage of the rate.

Considering the activity of the market during the past few weeks, it might be mentioned that the oils have been consolidating their advances. Sinclair, Barnsdall, Tidewater Associated, Independent, Phillips Mid-Continent and Standard of California have been the leaders in the advance.

Atlantic Refining Co.'s quarterly dividend of $1.75 on preferred stock was announced on Monday of this week, and is payable November 1 to stockholders of record October 16.

During the week application was made to list Plymouth Oil Co. which was announced as having $5,650,000 common stock outstanding with a par value of $5 per share.

Merger Rumors

Rumors of negotiations for acquisition of Mid-Continent Petroleum Corp. by Atlantic Refining Co. are being circulated in financial quarters but lack confirmation. Atlantic Refining was recently reported negotiating with Union Oil Co. of California. Reports of negotiations with Mid-Continent are discounted in some quarters which talk of a deal under consideration whereby Atlantic will figure in a triple consolidation with Tidewater and Sinclair. A third report links Atlantic with Gulf Oil in a pending merger. Officials of the companies involved have not commented on the rumors. Atlantic Refining stockholders meet October 15 to vote on a stock increase to 4,000,000 shares, $25 par, from the present 500,000 shares $100 par.

Italo Petroleum

Italo Petroleum Corp. of America declared an initial dividend of 1¾ cents on 7 per cent cumulative preferred, payable November 1 to stock of record October 15, placing stock on a 7 cent annual basis.

New York Oil

At stockholders' meeting of New York Oil Co., capitalization was changed to 400,000 shares of $10 par from 400,000 shares of $25 par. Number of directors was reduced to five from nine.

Mexican Petroleum

Mexican Petroleum Corp. declared regular quarterly dividends of $3 on the common and $2 on the preferred, both payable October 20 to stock of record September 29.

Indiana Pipe Line

Indiana Pipe Line Co. declared a special dividend of $5 and regular quarterly dividend of $1 both payable November 15 to stock of record October 26. The special dividend will be paid from surplus. Previous quarterly payments comprised $1 regular and $1 extra since August, 1927, while in December of last year a special dividend of $15 a share was paid.

Indian Refining

In remarks to stockholders of Indian Refining Co. accompanying the six months report, J. H. Graham, president, states that during the period the spread between market price of crude petroleum and refined gasoline was as low as during last half of 1927, and only refineries with the most modern equipment could operate without loss in either period. The spot tank car market began to improve in April, and by July tank wagon and service station markets for gasoline showed improvement for the first time in two years.

While the spread is not yet what it was in 1926 and prior thereto as company's refinery makes a much higher percentage of high quality gasoline than the average plant, earnings on gasoline for July, August and currently are substantial, he said. If the present movement for conservation of crude oil in the ground continues, erratic price fluctuations will be gradually eliminated, such stable conditions placing company in a satisfactory competitive position, he believes.

The new plants for manufacture of Havoline motor oils are in operation but no earnings from them are reflected in the first six months. By computation of costs and yields, it is believed earnings will be greatly increased by this new process. The new Havoline oil will be made in greatly increased quantities at substantially lower costs, he stated.

"This year marks the close, for the

(Continued on Next Page)

OIL BONDS ON THE NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Members New York Stock Exchange
Kennedy Bldg., Tulsa, Okla.

Amount outstanding	Company—	Date	Pct.	Int.	Week ended Sept. 29 Sales	High	Low	Close
11,603,000	American Nat. Gas Co.	Oct. 1942	6½	A&O	No sales.			
3,000,000	Beacon Oil Co.	Nov. 1936	6	M&N	No sales.			
18,900,000	Cities Service deb.	Jan. 1966	6	M&N	No sales.			
15,000,000	Cities Serv. refunding deb.	Jan. 1966	5	M&S	No sales.			
24,843,700	Cities Service Gas Co.	May 1942	5½	M&N	5,000	93⅜	93⅜	93⅜
12,000,000	Cities Service Gas P. L. Co..	Jan. 1943	6	J&J	No sales.			
12,000,000	Continental Oil Co.	Nov. 1937	5¼	M&N	4,000	99¼	99½	99¼
3,000,000	Dixie Gulf Gas Co. A	Sept. 1937	6½	M&S	2,000	95	95	95
18,000,000	Empire Oil & Ref. Co.	Apr. 1942	5½	A&O	No sales.			
3,877,100	Galena Signal Oil Co.	Apr. 1930	7	A&O	1,000	92¼	92¼	92¼
30,904,000	Gulf Oil of Pa.	Dec. 1937	5	J&D	No sales.			
12,000,000	Gulf Oil of Pa. debs.	Feb. 1947	5	F&A	No sales.			
4,000,000	Houston Gulf Gas	Apr. 1943	6	A&O	20,000	100½	100¼	100½
4,000,000	Houston Gulf Gas	Apr. 1943	6½	A&O	10,000	96	95⅝	96
6,339,000	Independent Oil & Gas	Mar. 1939	6	M&S	8,000	95¼	95	95¼
15,000,000	Lone Star Gas Co.	May 1942	5	M&N	14,000	103¼	103	103
11,650,000	Richfield Oil Co.	Sept. 1941	6	M&S	5,000	98½	98	98½
1,427,000	Richfield Oil Co.	Jan. 1931	5½	J&D	No sales.			
9,733,000	Sun Oil Co.	1939	5½	M&S	No sales.			
4,000,000	Transcontinental Oil Co.	Apr. 1930	7	A&O	7,000	101	101	101
2,500,000	Warner-Quinlan Oil Co.	1942	6	A&O	20,000	106⅝	105⅝	105⅝
					No sales.			

OIL BONDS ON THE NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members New York Stock Exchange
Kennedy Bldg., Tulsa, Okla.

Amount outstanding	Company—	Date	Pct.	Int.	Week ended Sept. 29 Sales	High	Low	Close
.....	Atlantic Refining Co.	July 1937	5	J&J	22,000	101¼	101	101
18,864,500	Barnsdall Oil with war.	Dec. 1940	6	J&D	528,000	114⅜	109¼	110½
6,000,000	Barnsdall Oil without war...	Dec. 1940	6	J&D	299,000	93⅝	93	93½
11,400,000	California Pet. conv. deb. ..	Nov. 1938	5½	M&N	12,000	103	102¾	102⅞
7,400,000	California Pet. conv. deb. ..	Feb. 1939	5	F&A	53,000	102	101⅛	101⅜
.....	General Petroleum	Aug. 1940	5	F&A	10,000	100⅝	100½	100½
25,000,000	Humble O. & R. deb.	July 1932	5½	J&J	53,000	101⅝	101	101⅛
24,239,000	Humble O. & R. deb.	Apr. 1937	5	A&O	32,000	101	99¾	100
10,103,000	Mid-Cont. Pet. Corp.	Mar. 1940	6½	M&S	4,000	105⅛	105	105⅛
3,745,000	Pan-American Pet. & T. ...	Aug. 1930	7	F&A	No sales.			
10,161,900	Pan-American Pet. & T. ...	Nov. 1934	6	M&N	16,000	103	102¼	102¼
40,000,000	Phillips Pet.	June 1939	5½	J&D	110,000	93½	92⅝	93
.....	Pierce Oil deb.	Dec. 1931	8	J&D	No sales.			
.....	P. & R. Corp. without war...	June 1931	8	J&D	No sales.			
20,000,000	Pure Oil	Aug. 1937	5½	F&A	3,000	110¾	110¾	110¾
30,000,000	Shell Pipe Line Co.	Nov. 1952	5	M&N	93,000	99¼	98⅞	99¼
50,000,000	Shell Union Oil Co.	May 1947	5	M&N	31,000	95⅜	94⅝	95½
3,431,500	Simms Pet. Co.	Nov. 1929	6	M&N	86,000	98⅛	97½	98
44,816,500	Sinclair Co. Oil Co. A	Mar. 1937	7	M&S	15,000	102⅛	101½	101½
23,086,500	Sinclair Co. Oil Co. B	Mar. 1938	6½	J&D	148,000	102	101½	102
20,000,000	Sinclair Co. Oil Co. D	Sept. 1930	6	M&S	56,000	99⅞	99⅝	99⅝
.....	Sinclair Cr. Oil Pur. Co. A..	Jan. 1938	5½	J&J	40,000	98⅞	98⅝	98⅝
.....	Sinclair Pipe Line Co.	Oct. 1942	5	A&O	61,000	97⅝	97½	97⅝
15,000,000	Skelly Oil Co.	Mar. 1939	5½	M&S	19,000	94¼	93¾	94⅛
.....	Standard Oil of N. J.	Dec. 1946	5	F&A	28,000	93⅛	93	93⅛
.....	Standard Oil of N. Y.	Dec. 1951	4½	J&D	263,000	102⅞	102¼	102½
.....	Union Oil of Calif.	Jan. 1931	5	J&J	123,000	96	95¼	95½
8,934,500	Union Oil of Cal. 20 yr. A...	May 1942	6	F&A	1,000	100	100	100
9,419,000	Union Oil of Cal. series C ..	Feb. 1935	5	A&O	No sales.			
4,870,000	White Eagle Oil & Ref.	Mar. 1937	5½	M&S	1,000	109¾	109¾	109¾
					20,000	99	98¼	98⅞
					28,000	98¼	98	98

INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis. Bro. & Co., Kennedy Building, Tulsa, Okla.
Members New York Curb Market

1926 High	1926 Low	1927 High	1927 Low	1928 High	1928 Low	Par value	Stocks	Week ended September 29 Sales	First	High	Low	Last	Change
$6.75	.45	2⅞	.55	1½	.66	$5	Amer. Con. Oilfields						
..	..	7½	2¾	6⅝	3⅛	N.P.	Amer. Maracaibo	2,160	5	5½	4⅝	4⅝	—¼
..	..	2¾	1	4½	2¼	$10	Argo Oil	5,200	4½	4½	2½	2½	—1⅝
85¼	60	40	20½	42	32¾	N.P.	British American						
28⅜	9¼	28¼	15½	23⅞	12½	25c	Carib. Syndicate (new)	3,800	14⅞	15⅞	14	14⅝	—⅜
..	..	58¾	40¼	71	54	$20	Cities Service	21,100	67¾	68¼	67¾	68¼	+⅛
..	..	95⅜	87	103½	94½	100	Cities Service, pfd.	900	99⅜	99⅜	99	99⅜	.....
..	..	87⅛	73⅜	95⅜	87⅜	10	Cities Service, pfd. B	300	9⅜	9⅜	9⅜	9⅜	.....
3½	1¾	3⅞	1⅛	2¼	1⅛	1	Colombia Syndicate	3,900	1¼	1⅜	1⅛	1¼	.....
..	..	9¾	6⅜	8⅛	6½	10	Consolidated Royal						
16	10	14⅞	9½	17½	10	N.P.	Creole Syndicate						
..	..	3	.50	2¾	.76	N.P.	Crown Central	200	1⅝	1⅝	1½	1½	—⅛
7⅞	6¾	12	4	30¼	8½	N.P.	Darby Petroleum	6,800	20½	22⅜	20½	22	+1½
..	..	2½	.74	2½	1	N.P.	Derby Oil & Refining	No sales.					
..	..	16¾	4	15½	7½	N.P.	Derby Oil & Refining, pfd.	100	14	14	14	14	—½
..	..	2	.40	.53	.15	N.P.	Gilliland ctfs.	No sales—20@50.					
98	92	118	86¼	148½	101⅛	$25	Gulf Oil Corp.	10,800	125⅞	127½	125	125	—1⅜
$3.00	.83	2½	.80	2¾	1	10	Intercontinental Pet.	108,900	2¼	2½	2⅛	2⅜	+⅛
..	..	2¼	1⅛	3	1¼	N.P.	Kirby Petroleum	500	2	2	1¾	1¾	—⅛
12¼	5¾	10⅞	5⅛	9⅜	5½	N.P.	Leonard Oil & Dev.	3,700	6	6½	6	6	—¼
27	20	27½	20	32⅜	20	N.P.	Lion Oil & Refining	2,400	30¾	33	31½	32	+⅞
46	30	59⅜	37	57	49	$25	Lone Star Gas	7,800	56½	59⅞	57¾	58	+⅜
2⅞	1	2⅞	.80	1⅞	.50	1	Magdalena Syndicate	79,700	..	86	55	80	+20
34	12½	52	12	45	36½	N.P.	Margay Oil	34½@39—no sales.					
8	5½	12¼	5	8	4¼	N.P.	Mexico-Ohio Oil						
1¾	1⅛	1½	1	1½	.81	$1	Mountain & Gulf	8,000	..	89	82	85	+3
26	23	29¼	22¾	28⅝	21½	10	Mountain Producers	4,600	22	22⅞	22	22	—⅜
6⅝	5	5⅞	4⅝	5⅝	4¼	5	New Bradford	1,600	4½	4⅜	4½	4⅜	+¼
..	..	16	9¼	11⅜	7⅛	1	New Mex. & Ariz.	6,400	9	9¼	8⅛	8⅛	—⅞
..	..	12¾	9½	13¼	10¾	N.P.	North Central Texas	2,200	11⅜	12	11⅜	12	—¼
10⅛	5⅞	9⅜	3¼	6	2¼	N.P.	Pandem	3,900	2⅝	3	2⅜	2⅛	+⅛
12¼	11⅜	12¼	7	15⅝	8½	N.P.	Pantepec Oil	127,800	12⅞	15¼	12⅜	14⅜	+1⅞
22¾	12	13½	5⅛	7¾	5⅛	$10	Pennok Oil	800	5¼	5¼	5⅛	5⅛	.....
17	8½	24⅜	7	14½	9	25	Red Bank Oil	300	9⅛	11½	9⅛	11½	+2⅜
30¼	12	15½	3½	12⅞	4⅛	N.P.	Reiter-Foster	8,600	9¼	10¼	9¼	9¼	—⅝
7	4½	7	4½	9⅞	4⅜	N.P.	Ryan Consolidated	100	5¼	5¼	5¼	5¼	.....
10	7⅛	8	5¼	7¼	5⅞	$10	Salt Creek Cons.	2,800	6⅛	6⅛	5⅞	6	—⅜
35	24¼	35½	27¼	35	23½	10	Salt Creek Prod.	4,800	25¼	27¼	25⅞	26⅛	+⅛
6⅞	1¼	7	1¼	3½	1	5	Savoy Oil	No sales.					
27	7⅝	26½	17	22⅞	13	10	Tidal Osage	500	..	19	17⅝	18¾	—⅛
25¾	7⅝	23¾	15	21¼	13⅛	10	Tidal Osage, nonvoting	1,000	16⅝	18¼	16⅛	18¼	+⅛
92	63½	92	63½	87	75	100	Transcontinental, pfd.	No sales.					
8	4½	7⅜	4¼	6⅝	4⅞	5	Venezuelan Petrol	192,800	4¾	8⅛	4¾	7¼	+2½
36¼	22	32⅝	19½	25	15¼	N.P.	Wilcox Oil & Gas	500	16¼	17	16¼	16¾	—¼
8⅛	5½	8	4¾	8¼	4⅞	$1	Woodley Petroleum	100	5	5	5	5	.....
6½	6	6	1¾	8⅜	2⅛	25	Y Oil & Gas (new)	No sales.					

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members New York Stock Exchange, Kennedy Building, Tulsa, Okla.

1926 High	1926 Low	1927 High	1927 Low	1928 High	1928 Low	Listed capital	Par value	Stocks	Div. rate	Last paid	Transactions week ended September 29 Sales	First	High	Low	Last	Change
32⅞	24¼	7⅞	27⅝	38	27⅛	(sh) 922,075	N.P.	Amerada Corp.	50cQ	July 31, 28	14,600	32⅞	33⅝	31¼	31⅝	— 1¼
74	39⅞	82½	35⅛	85	51¼	(sh) 209.180	N.P.	American Republics Corp.	.....	.....	41,700	74	77¼	69	71⅞	— 1⅛
60	44⅜	50¼	35	53⅜	37½	$56,000,000	$25	Associated Oil	50cQ	June 30, 28	240	48	49	48	48⅛	+ ⅛
128⅜	97	131⅜	104	184⅝	95¾	50,000,000	100	Atlantic Refining	$1Q	Sept. 15, 28	69,500	184¾	194⅝	178½	183¾	— 6
33½	23½	35½	20¾	36¼	20	28,725,675	25	Barnsdall Corp. A	.....	Feb. 6, 28	211,000	34⅝	36	33⅜	33½	— 1¼
94¼	50	96¾	65	94⅞	68	20,785,400	100	General Asphalt	.....	.....	21,300	79⅜	82½	74	75	— 6¾
72	50¼	175¾	60⅛	167	119	25,000,000	100	Houston Oil	.....	.....	21,200	144	149½	137½	138¼	— 5⅜
34	19⅝	32¾	17⅝	31⅞	21¾	(sh) 500,000	N.P.	Independent Oil & Gas	25cQ	July 31, 28	52,400	30½	32⅜	30½	30½	— ¼
12¾	7½	12⅛	7⅝	39⅝	9	$3.280,340	$10	Indian Refining	.....	May 31, 24	21,400	33⅝	33⅜	30	31¼	— 2
25⅞	16½	37¾	20½	39⅛	27⅜	(sh) 3,992,122	N.P.	Lago Oil & Transport	.....	May 1, 27	15,200	34⅞	36⅝	34	35⅜	+ 1⅛
19⅞	12	18⅛	10	19¾	9⅜	(sh) 1,237,078	N.P.	Lousiana Oil Refining	.....	.....	16,300	16⅛	16¼	15	15⅛	— ⅜
28	16½	22¾	12	25½	12½	(sh) 330,000	N.P.	Maracaibo Oil	.....	.....	4,200	17⅞	19¼	17½	18¼	+ ¼
63⅜	49¼	58½	31	44½	33	(sh) 2,316.692	N.P.	Marland Oil Co.	.....	Mar. 31, 27	36,500	40½	40⅞	38¼	38⅝	— 2
13¾	6	9¼	3	39	4⅝	(sh) 945.939	N.P.	Mexican Seaboard	.....	Dec. 15, 20	159,500	30¼	33⅞	29¼	32¼	+ ⅛
37	20½	39⅜	25½	37½	25⅛	(sh) 1,357,461	N.P.	Mid-Continent Petroleum	.....	Aug. 1, 27	164,200	36½	37¼	34	35	— 2
104¼	90	105	97	115⅛	103¼	$6,718,000	$100	Mid-Continent Petroleum pfd.	$1.75Q	Sept. 1, 28	100	112	112	112	112	+ 1⅞
2½	½	3¾	1⅝	7⅜	2⅜	24,298,850	10	Middle States	.....	July 1, 23	131,900	6½	7¼	5⅝	5⅝	— 1⅛
76½	56⅛	65⅞	40⅛	53¾	38¼	$48,807,400	$50	Pan American P. & T.	.....	Oct. 20, 27	12,400	46¾	50¼	45½	45½	— 1¼
78⅜	56⅞	66⅜	40¼	54⅝	37¾	121,097,900	50	Pan American P. & T. B	.....	Nov. 15, 24	191,200	48⅞	51⅝	48	49	.....
46	30	37⅞	16¾	28⅜	15½	(sh) 400,000	N.P.	Pan American Western B	.....	Jan. 30, 27	1,300	17¼	17⅜	17⅛	17⅛	— ⅛
32	4½	18⅞	8	21¾	11½	(sh) 198,770	N.P.	Panhandle P. & R.	.....	.....	3,600	15⅛	15⅜	14⅛	14¼	— 1
99⅜	51	83	54	106¼	70	$2.935.200	$100	Panhandle P. & R. pfd.	.....	July 2, 23	No sales.					
57⅜	40	60¼	36¼	44⅝	35¼	(sh) 2,406,796	N.P.	Phillips Petroleum	37½Q	Oct. 1, 28	73,000	44¼	45	42	42¼	— 2¼
....	....	1⅛	½	5¼	½	$29,622,925	$25	Pierce Oil Corp.	.....	.....	34,500	3⅝	3¾	2¾	3	— ¾
7	2¼	5½	2½	6⅝	3½	(sh) 2,500,000	N.P.	Pierce Petroleum	.....	.....	19,600	5¾	5⅝	5	5	— ½
20¾	11	33⅞	16¾	28⅝	16	$37,450,850	$50	Producers & Refiners	.....	Sept. 15, 23	9,000	25⅞	26⅛	23⅝	24⅜	— 1⅜
41¾	30¾	50	36⅞	49⅝	41	2,845,350	50	Producers & Refiners pfd.	.....	May 1, 25	250	45⅜	45⅜	44⅜	45⅜	+ ⅜
31	25¼	33½	25	27½	19	75,959,350	25	Pure Oil Co.	12½Q	Sept. 1, 28	27,700	25½	26	23¾	24	— 1⅞
27½	22	28⅝	25⅜	53	23½	$29,224,894	$25	Richfield Oil	.....	Oct. 20, 27	37,100	50	50¼	48	48⅛	— 1⅜
57⅜	47⅜	54½	44¼	59½	44⅝	(sh) 611,303	13.40	Royal Dutch, N. Y. shares	$1.879	Aug. 3, 28	6,700	58½	59½	57¾	58⅝	+ ½
48⅝	40½	47⅞	41⅜	51¼	40⅝	(sh) 77,590	£2	Shell Transport & T.	$1.455	July 23, 28	500	....	53	51⅜	53	+ 1⅝
31	24	31¾	24⅝	31	23¼	(sh)10,000,000	N.P.	Shell Union Oil	35cQ	Sept. 30, 28	27,400	29⅜	29½	27⅜	28¼	— ¾
28⅝	15⅛	26⅞	14¼	25⅛	18⅛	$7,208,080	$10	Simms Petroleum	.....	Apr. 1, 27	10,300	22⅝	22⅞	21¼	21½	— 1¼
24⅞	16¾	22⅜	15	31⅞	17⅜	(sh) 4,501,915	N.P.	Sinclair Consolidated	.....	.....	393,200	31⅝	32½	28⅞	29½	— 2¼
99½	90	104½	97	109½	102½	$16,604,600	$100	Sinclair Consolidated pfd	$2Q	Aug. 15, 28	200	108	108	108	108	+ ¼
37⅛	26⅝	37⅜	24⅛	35½	25	27,396,590	25	Skelly Oil Co.	50cQ	Sept. 15, 28	66,400	35	36¾	35⅛	35¼	— ¼
63⅝	51½	60¾	50⅝	63⅞	53	(sh)13,016,434	N.P.	Standard Oil of California	62½cQ	Sept. 15, 28	50,300	60	61⅞	59¾	59⅞	— ⅛
46⅜	37½	41⅜	35⅛	49	37¾	$607,910,525	$25	Standard Oil of New Jersey	‡25cQ	Sept. 15, 28	164,400	46½	47⅜	45⅜	45⅜	— ¾
47¼	30⅜	34⅛	29¾	41½	28¾	427,973,275	25	Standard Oil of New York	40cQ	Sept. 15, 28	129,000	36¾	37¼	35½	35½	— 1⅛
41⅝	30⅛	34⅞	30	59½	31½	(sh) 1,206,073	N.P.	Sun Oil	25cQ	Sept. 15, 28	3,700	57¼	57¼	55	55⅜	— 1½
5¼	1	6½	3⅛	9½	2½	(sh) 1,121.368	N.P.	Superior Oil Corp.	.....	Dec. 20, 20	86,600	8⅜	8½	7⅛	7⅜	— ⅝
58	48	58	45	73½	50	$180,480,550	$25	The Texas Corporation	75cQ	Oct. 1, 28	140,400	70½	70½	67⅛	67½	— 2
19½	12	18⅞	12	17½	12½	8,380,340	10	Texas Pacific Coal & Oil	.....	Jan. 3, 28	7,200	14¼	14½	13⅝	14	— ¼
39¼	27	29⅛	19	30⅝	19⅝	(sh) 2,168,410	N.P.	Tide Water Oil Co.	20cQ	June 30, 28	9,300	30	30	29	30	+ ⅛
103	87¼	90⅛	85	94½	86	$20,705,200	$100	Tide Water Oil Co. 5% pfd.	$1.25Q	Aug. 15, 28	700	90	90¼	90	90¼	— ¾
27	20⅞	19⅛	15¾	25	14¾	(sh) 4,796,158	N.P.	Tide Water Associated	.....	Aug. 1, 27	67,700	23⅞	23⅞	21⅜	21¾	— 2¼
5½	3	10⅜	3¾	10⅛	7¼	(sh) 3,742,029	N.P.	Transcontinental Oil	.....	.....	50,200	8¾	8⅞	8¼	8½	— ⅛
58⅝	37¼	56½	39⅝	57	42¾	$40,791,225	$25	Union Oil of California	50cQ	Aug. 10, 28	7,400	51¼	51½	49½	49½	— 2⅛
120⅜	84¼	127½	94	128⅛	116¾	30,844,000	100	Union Tank Car Co.	$1.25Q	Sept. 1, 28	400	113	113	110½	111	— 1½
30⅛	23½	34½	24½	42¾	26	(sh) 310,956	N.P.	Warner Quinlan	50cQ	July 2, 28	11,900	40⅝	40⅞	39⅛	39⅜	— ⅞
29¾	25⅛	27½	20	29½	20⅛	(sh) 490,000	N.P.	White Eagle Oil & Refining	25cQ	July 2, 28	*5,700	28	29¼	*27⅛	27½	.....

*Odd lots. ‡Also extras.

STANDARD OIL STOCKS ON NEW YORK CURB

21	16	21⅝	17⅞	22⅜	16⅜	£4,126,460	£1	Anglo-American Oil	24.4c	June 6, 28	5,800	....	19½	18⅞	19½	+ ½
....	....	3¾	¾	5	1¼	(sh) 500.000	N.P.	Atlantic Lobos	.....	.....	400	....	3½	3¼	3⅜	— ⅛
75	65	69	50	56	48½	1,000.000	25	Borne Scrymser	$18.A.	Apr. 16, 28	No sales.					
59½	42	60	45	76	53	10,000,000	50	Buckeye Pipe Line	$1Q	Sept. 15, 28	1,000	....	70	67	68	+ 1
82½	65	126	76½	161	117¼	3,000,000	25	Chesebrough Mfg.	$1Q	Sept. 29, 28	200	....	140¼	140	140	+ ¼
25⅞	17½	22⅝	16¼	23	16	36,057,840	10	Continental Oil	.....	Dec. 15, 27	13,500	17½	18¾	17⅜	18½	+ ¾
137	102	137	89	114	88	3,000,000	100	Cumberland Pipe Line	$2Q	Sept. 15, 28	50	97	97	97	97	— ¼
63¾	43	68½	47	88	64⅛	5,000,000	100	Eureka Pipe Line	$1Q	Aug. 1, 28	50	71½	71½	71½	71½	+ 1½
32½	9⅞	13½	3½	12	5	16.000.000	100	Galena Signal Oil	.....	June 30, 25	300	....	7⅛	7	7	— ⅛
68⅛	52	68½	54	84¾	60	73,117,577	25	Humble Oil & Refining	30eQ	July 1, 28	27,100	83⅞	84⅜	80½	81½	— ½
144½	125½	182	123¾	245	176½	20.000.000	100	Illinois Pipe Line	$6S.A.	June 15, 28	1,350	217	223	211	223	+ 6
....	....	64¾	37¾	79½	56¾	(sh) 6,458,267	N.P.	Imperial of Canada	25cQ	Sept. 1, 28	9,800	80	82	77⅜	78	— 1⅜
72½	58	94½	61	89½	74⅞	$5,000,000	$50	Indiana Pipe Line	$1Q	Aug. 15, 28	1,800	....	85¼	82	85	+ 2¼
35½	28¾	39	28¼	45¼	35	(sh)17,123,444	N.P.	International Petroleum	25c	June 30, 28	21,100	40½	41¼	38½	38¾	— 2¼
20¾	12½	24	13¼	32⅜	20⅛	$6,363,350	12.50	National Transit Co.	25eQ	June 15, 28	2,000	22	22¼	21¾	22	— ¼
51½	27¼	44½	31¼	59⅛	37½	5,000,000	100	New York Transit	.....	July 15, 26	1,150	....	57	55	57	— 2
80½	64	100	70	125	94	4.000.000	100	Northern Pipe Line	$3S.A.	July 1, 28	350	....	62	61¾	62	+ 5½
67¾	55¾	67⅞	52	68¼	58	60.0000.000	25	Ohio Oil Co.	50eQ	Sept. 15, 28	2,800	63⅛	63¾	61⅝	61⅝	— 2¼
24¾	16	39	12	84	29	10,000,000	25	Penn Mex. Fuel	$1.25	May 31, 28	500	38	38	36	36	— 1⅝
137½	122½	190	132	223	172	81,000,000	100	Prairie Pipe Line	$3.50	July 31, 28	1,800	189	191	186½	186½	— 2½
60¼	48	55½	45⅝	56	46	60,000.000	25	Prairie Oil & Gas	.....	Aug. 31, 27	9,600	48¼	49¼	47½	47½	— 1½
220	84½	201½	175½	186	167	4,000.000	100	Solar Refining	$5S.A.	June 20, 28	300	....	182	180½	182	+ 2
74½	61½	27¼	15½	35⅞	12	5.000,000	50	Southern Pipe Line	$2	Dec. 1, 27	No sales.					
50	34½	41½	35	53	36¾	2,000,000	25	South Penn Oil	50eQ	Sept. 29, 28	4,300	50¼	51⅝	50½	50½	+ ⅜
56	47½	83	55½	100	70	3.500.000	100	Southwest Pa. Pipe Lines	$1Q	July 2, 28	200	....	81½	81½	81½	+ 1½
70½	60¼	81½	64⅝	83⅝	70⅞	228,415.463	25	Standard Oil of Indiana	62½Q	Sept. 15, 28	25,300	77⅛	79⅛	76⅜	76⅜	— 1⅛
36½	16½	20⅞	14⅝	27¾	15	8.000.000	25	Standard Oil of Kansas	.....	June 16, 24	1,000	22¾	21½	21	21	.....
134⅜	108	130	111½	136⅛	122¼	17.012.559	25	Standard Oil of Kentucky	$1Q	June 30, 28	20,400	129¾	140	130½	132½	+ 3
51⅛	42	49½	40	45⅞	39⅞	4.559.850	25	Standard Oil of Nebraska	63cQ	Sept. 20, 28	600	43⅝	44½	43⅝	44½	+ ⅞
372	288	87½	72	85½	71	14,000,000	25	Standard Oil of Ohio	62½cQ	July 2, 28	4,200	85¼	89¾	85⅜	86	+ ½
21	15	21	14½	26	16	30.734.000	25	Swan Finch Co.	.....	Nov. 1, 19	No sales.					
109⅜	90¼	....	....	87⅛	72¼	124.941,600	25	Vacuum Oil	75eQ	Sept. 20, 28	14,400	82⅛	84	79½	80⅞	+ 1⅛

present, of construction program commenced nearly five years ago and we believe stockholders can look forward to greatly improved earnings in the future," Mr. Graham concluded.

Transcontinental Oil

The Transcontinental Oil Co. has called the entire outstanding issue of $4,000,000 of five-year 7 per cent notes, maturing April 1, 1930, as of October 1, at 101, ex-common stock purchase warrants. Holders of the notes are allowed to retain detachable warrants, which entitle the holder to purchase 100 shares of common stock at $12 a share until April 1, 1929. Proceeds of the recent issue of $12,000,000 first mortgage 10-year 6½ per cent sinking fund bonds will be used in part to retire the notes.

Shreveport El Dorado Pipe Line

W. H. Hoodless, vice president of the Pennsylvania Sugar Co., has been elected a director of the Shreveport El Dorado Pipe Line Co., Inc.

Cities Service

Cities Service Co. declared regular monthly dividends of one-half of 1 per cent in cash and one-half of 1 per cent in stock on common, 50 cents on the preferred and preference BB and 5 cents on preference B, all payable November 1 to stock of record October 15.

TWENTY REPRESENTATIVE STOCKS

The Oil and Gas Journal weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb was as follows:

Sept. 29	67.93	Aug. 13	65.16	June 25	62.88
Sept. 22	67.12	Aug. 6	66.16	June 18	62.95
Sept. 15	67.06	July 30	64.68	June 11	61.88
Sept. 8	66.76	July 23	64.13	June 4	65.74
Sept. 1	65.96	July 16	64.51	May 28	66.09
Aug. 27	65.79	July 9	65.38	May 21	66.85
Aug. 20	65.42	July 2	64.17	May 14	68.74

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry. Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

RESTORING LINES ON THERMOMETERS AND OTHER GLASS INSTRUMENTS

Some time ago I saw directions for restoring the faded lines on glass thermometers, graduates, and other glass instruments with a black substance but cannot locate it again. It will be appreciated if you can give me any help on this.—A. C. L.

This may be the directions which were proposed by Hannen and Bruce of the Bureau of Standards consisting of a mixture of sodium silicate, (water glass) and finely divided manganese dioxide, which is applied as a paste. A thermometer treated with this material retains the deep black color even when heated to 900 degrees Fahrenheit, and can be used in hot oil, water or steam without injuriously affecting the visibility of the lines. Clinical thermometers may be treated with any of the common antiseptic solutions without removing this coloring material. The ability of the material to resist attack by acids and alkalis has not been thoroughly tested, but the indications are that it is not entirely resistant to these. Other pigments than manganese dioxide may be used with the water glass to produce other colors. The ferric oxide gives a reddish color.

THE DIVINING ROD AND WATER WITCHING

Will you kindly give be a reference to a reliable publication dealing with the use of a forked branch or stick for locating water and minerals?—R. B. W.

The United States Geological Survey, Water Supply Paper 416, by A. J. Ellis, published in 1917, gives a history of this subject. The introductory note contains the following:

"The use of a forked twig, or so-called divining rod, in locating minerals, finding hidden treasure, or detecting criminals is a curious superstition that has been a subject of discussion since the middle of the sixteenth century and still has a strong hold on the popular mind, even in this country, as is shown by the large number of inquiries received each year by the United States Geological Survey as to its efficacy, especially for locating underground water, and the persistent demands that it be made a subject of investigation by the survey. The bibliography shows that a truly astonishing number of books and pamphlets have been written on the subject."

The bibliography given in this publication covers more than 26 pages, including the period from 1500 to 1916. Since 1917 the radio has been perfected and scientific mineral finding instruments have come to be recognized of value in collecting geological data. The author of this publication treats in detail of the efforts to defraud that have been made by numerous persons claiming to be experts with the forked twig. "To all inquirers the United States Geological Survey therefore gives the advice not to expend any money for the services of any "water witch" or for the purchase of any machine or instrument devised for locating underground water or other minerals." This opinion was held by many authorities but has been modified during the last 10 years.

PROPERTIES OF CHROMIUM AND COMPARISON WITH NICKEL PLATING

Can you furnish information about the main characteristics of chromium and also what are the advantages of chromium plated surfaces over those coated with nickel?—E. H.

Chromium is rapidly gaining a place in the petroleum industry as a means for solving the sulphur corrosion problem as met with in tubes, valves and even stills. The parts coated with chromium present a high resistance because of its hardness and the fact that there is very slow action by the various sulphur compounds.

There was an article by C. H. Humphreys in Automotive Industries, April 30, 1927, which described the properties of chromium and its application in the automobile industry. The material below is from this publication.

The melting point of chromium is 1,550-1,560 degrees Centigrade, and its atomic weight is about that of iron, but its specific gravity is 6.9 against 7.9 for iron. Chromium is immune from attack by all ordinary acids, ecept hydrochloric acid. It has little affinity for sulphur, and that is the basis of one of its most important applications. As is well known, iron combines readily with sulphur, and this is the cause of much trouble in the oil industry.

Chromium plating may be used on machinery shafting both to minimize the wear of their bearing parts and also to protect it from corroding influences. It is notably used on fan and pump shafts, and it has also been used on crankshafts, valve stems, and tappets. Soft metals like lead, tin, zinc, and babbit metal, do not adhere to it readily. Chromium-plated iron dipped into molten baths of these metals will remain quite clean. This suggests that if the crankshafts and similar parts are plated with chromium, there will be less tendency for the bearings to freeze. Chromium-plated shafts for racing cars are now being tried. Crankcase corrosion may be avoided by chromium plating. Manifolds plated with chromium furnish a very efficient protection against heat corrosion.

One of the features of chromium plating is that a relatively thin coating resists scratching; from this point of view a coating of 0.0003-inch suffices.

Compared with nickel, chromium possesses the advantage of not tarnishing under atmospheric influences, which makes it suitable for radiator shells, as it eliminates the need for frequent polishing. For radiation purposes a very thin coating suffices; shells were plated in one and one-half minutes with a current density of 200 amperes per square foot, with a coating about 0.00061 inch thick.

Chromium plating is widely replacing nickel plating in cases where the latter soon loses its bright finish through frequent polishing with pumice and similar polishes. Tests have shown that a chromium plating will outlast nickel plating by about 15 times.

The reflecting power of chromium is about 65 per cent of that of newly plated silver surfaces, but after the latter have been repeatedly polished, the chromium which requires the minimum of polishing, is the better reflector. The reflecting power of chromium drops slightly soon after plating and then remains constant.

CHEMICAL ACTION OF NON-DETONATING COMPOUNDS

Are the different substances which are added to gasoline for the purpose of reducing the knocking considered to act because of their influence in changing the physical conditions, or do they change the chemical reaction? What I mean by physical condition is such as either shortening the flame or causing less gas—B. T. S.

We have had several discussions of this subject, on this page in previous issues of The Oil and Gas Journal, but special attention is called to Action of Antiknock Substances, February 23, 1928; Antiknock Chemicals and Combustion of Gasoline, February 2, 1928. The subject was reviewed and is well summarized in a series of articles in Engineering, 35 Bedford Street, Strand, London, issues of February 4, 11 and 18, 1928. The material below has been taken from this summary.

It is now established that detonation in an engine using liquid fuel is of a chemical origin due to the formation of organic peroxides, which become concentrated in the nuclear drops during compression, and ignite them simultaneously when the detonation temperature of the peroxide is reached. This point is regarded by research workers as being of great importance.

The method adopted for investigating the products of low-temperature oxidation consisted, briefly, in passing them slowly through a glass tube in an electric furnace, maintained at the desired temperature, and analizing the products obtained. The temperature of incipient oxidation in the case of detonating fuels, such as the paraffins, was found to be far below the ignition temperature, and to be variable with mixture strength, the lowest temperatures being found with mixtures more than twice as rich as could be used in an engine. There was a general parallelism between the oxidation temperature and the ignition temperature, but in the case of nondetonating fuels, such as benzine, the oxidation temperatures appeared to be higher than reputed values of the ignition temperature, and varied but slightly with mixture strength. Of the intermediate products of oxidation of the paraffins the aldehydes were far the most important, reaching 70 per cent in the case of hexane. In the case of nondetonating fuels, such as benzine and alcohol, the aldehyde yield was very small, and occurred only at much higher temperatures.

In the case of the paraffins, the first appearance of the aldehydes at low temperatures was accompanied by a certain proportion of carbon dioxide and water. This led to the conclusion that the aldehydes themselves were decomposition products of some prior compound formed by the direct union of oxygen with the molecule of the fuel. This conclusion received a striking confirmation in the discovery that the addition of a dope, such as lead ethide, or iron carbonyl, to a paraffin mixture undergoing slow combustion had the effect of almost entirely preventing the normal formation of aldehydes, reducing the yield in the case of hexane from 72 per cent to 10 per cent at 500 degrees Centigrade, and to a mere trace at lower temperatures. It appeared from the experiments that the dopes did not act by destroying the aldehydes after they were formed, but by preventing their formation. That is to say, the dopes must take effect directly on the primary compound, of which the aldehydes are products of decomposition of a relatively stable character.

EDELEANU SULPHUR DIOXIDE TREATING PROCESS

It will be appreciated if you will give me the original patent number, with date, of the Edeleanu process for treating gasoline with sulphur dioxide and an outline of the process.—N. P. L.

This process has been described in many publications. The original United States patent covering the treating of petroleum distillates with sulphur dioxide was issued to Edeleanu February 2, 1909; No. 911,553. The process appears to be especially well suited for the treatment of distillates containing large quantities of unsaturated bodies with excessive percentages of sulphur. Its application is reported to have been successful in the treatment of the oil found in California which contains large quantities of sulphur.

The use of sulphur dioxide is based on the fact that it dissolves the unsaturated, certain aromatic and sulphur compounds, and leaves the less objectionable and more useful hydrocarbons undissolved. According to Edeleanu the liquefied sulphur dioxide may be recovered from the solution, so that it can be used repeatedly without appreciable loss. This selective action of sulphur dioxide is used in the process.

If the distillate is thoroughly mixed with liquid sulphur dioxide, at low temperatures which are usually below the freezing point of water, certain objectionable compounds are, dissolved, but the paraffins and naphthalenes are not acted up. The sulphur dioxide is much heavier than the distillate, so falls to the bottom, and therefore the liquids form two layers which may be easily separated.

The quantity and temperature must be varied according to the nature of the oil. The sulphur dioxide may be added until the oil is saturated, then continued adding until the aromatic substances are dissolved and separate as a distinct layer. As the treatment continues, the distillate is gradually refined until finally there is no further action and the oil is fully refined. The temperature is important. With increasing higher temperatures the solubility of the paraffins and naphthalenes, which at low temperatures are practically insoluble, increases very rapidly. The aromatic hydrocarbons are soluble in sulphur dioxide at all temperatures. As the aromatic substances are taken up by the solvent the brown color appears and as soon as a working level of this liquid is obtained, some is drawn off. Then the process of adding and drawing off becomes continuous.

The saturated liquid may pass through an exchanger or other means of heating so that the temperature is raised enough to drive off the sulphur dioxide. This flows to a condenser, and after proper cooling it may be recovered as liquid sulphur dioxide.

The process is described in more detail in American Petroleum Industry, by Bacon and Hamor, Volume 2, page 594.

STEADY MOVEMENT IN CHICAGO MARKET

(Continued from Page 118)

sour, and most of the latter is at least complained of and some absolutely rejected on account of odor.

Gas Oils

Gas oils moved quite freely. There was considerable inquiry and resulting business from gas companies for their October supplies. The price of the straightrun gas oil is holding at 2½ cents for ordinary business, although the large buyers such as the gas companies are generally securing their October quota at 2⅜ cents. The industrial demand was some better. Zero gas oils were in active demand more particularly at the first of the week when distributors were clamoring for supplies. There was a stiffening of prices up to full quotations with little change in the latter. Some refiners are blending a product which has a 32-36 gravity and while they sell it as fuel oil it is being resold, it is claimed, as gas oil. The price to the trade usually is the same as for their straightrun gas oil. A large volume of what can be termed Texas gas oil is being offered, some from Texas crude but run in plants outside of that State, and much of it has the characteristics of the crude from which it is run. The prices named are lower than the same gravity of oil can be had from other sources. Aside from the seasonable increase in the demand and the firming of prices on the kinds of oil most suitable for use as domestic burner fuel there was no change in this market.

Two Fuel Markets

It is very nearly true that there are today two fuel oil markets, the heavy fuel oils from Texas and those of similar characteristics even when run outside of that State, and the low sulphur oils with a zero cold test. The former are in very plentiful supply. It is currently reported and is understood to be true in general although there are exceptions that the West Texas refiners need relief from oversupplies of fuel oil. The West Texas refiners are not the only ones. In nearly every case the excessive supply is in the heavy fuel oils, some of it high in sulphur according to the crude from which it is run. The pressure to sell these surplus supplies is very great. One refiner made what it called the lowest price ever quoted for fuel oil to celebrate the opening of a new skimming plant. Three gravities were named, the highest being 18-22 gravity and at the one price of 50 cents a barrel. This was very generally broadcast. It did not make much of an impression with large buyers or the dealers as lower prices have been and are still quoted for these heavy gravities, but it did confirm the impression that there was a large volume of heavy fuel oil seeking buyers. There was a good demand from industrial users for low cold test oils last week. In fact the consumption is good right now and the outlook is for an increase of the industrial demand as well as for larger consumption for heating purposes.

Lubricating oils are firm and quite active. One sale of 15 cars of bright stocks to a Middle West refiner is reported. The price situation is firm and leading refiners are keeping their stocks rather low. One advance of 2 cents was made last week. Neutrals are not in quite as good position and there is more variation in prices. Motor oils are moving satisfactorily. The industrial specialties and industrial oils generally are active.

MUSKEGON FIELDS

(Continued from Page 51)

I Nash, SW NW, Section 20-9-15, Ravenna Township, is still fishing for a bit at 800 feet. Rig was moved in this week for the Lima Oil Corp.'s No. 1 Atwood wildcat in Newaygo County, and rig is also being moved in for Edward DuVall's No. 2 Carrie Mears, about three-quarters of a mile west of No. 1, in Golden Township, Oceana County.

The rig has been shipped for a new wildcat to be drilled by the Hesperia Oil Development Co. in Newaygo County near the village of Hesperia. The exact location of this well has not yet been announced.

About 3,000 acres of property lying north of Grand Rapids in Kent County has been leased and J. Brooke Reed, Ohio contractor who has been operating for the past few years at Saginaw and in the Muskegon Field, is planning to drill.

New State Regulations

"The State of Michigan will prevent destruction and damage to the Muskegon oil field," said Gov. Fred W. Green, following a conference with H. H. Hill, retiring chief of the petroleum division of the United States Bureau of Mines, and other state and federal representatives at Lansing. He referred to several conditions which threaten to ruin the field if not attended to immediately: Drilling on too small pieces of acreage; use of poor methods to case off oil, gas and brine strata; inadequacy of state and local protection against fire; and regulating the organization of oil syndicates, partnerships and corporations.

One of the first definite steps taken was an order that no more drilling permits would be issued to operators having less than 5 acres on which to drill each well. Another rule is the location of wells at least 200 feet from any property line. The minimum space between wells will be 400 feet.

First steps to bring about a prorating of the gas from the field were taken by the Chamber of Commerce which voted to recommend that the gas be prorated among all of the operators in the present proven area. A ratio of 50 per cent based on acreage and 50 per cent based on open flow capacity was suggested as equitable.

The formation of an operators' association based on a charter similar to that of the Mid-Continent Oil and Gas Association is under way.

PRESSURE CONTROL TOPIC OF ENGINEERS' MEETING

The Mid-Continent section of the American Institute of Mining and Metallurgical Engineers held its first meeting of the season in the Mayo Hotel, Tulsa, Friday evening, September 28.

An excellent paper entitled "Pressure Control of Oil Wells," was presented by E. H. Griswold and W. J. Wilkins of the Marland Production Co. The authors discussed pressure control methods and the results obtained in wells flowing naturally, wells on air lift and pumping wells. The paper proves beyond any possible doubt that rapid advances are being made in field experimentation upon flowing wells, especially in increasing the efficiency in the utilization of formation gas in air and gas lift operations under pressure control.

Some of the outstanding points emphasized in the paper and in the discussions that followed were the authors' preference for straight tubing instead of combination tubing, the advantages of certain types of mechanical installations, especially the use of needle valve chokes and surface connections with the convex curves always upward, the use of water injected into the air string to clean sand from the well, the use of pressure control without any reduction in rate of production, the disadvantages of applying some arbitrary back pressure and the advantages of determining the most beneficial back pressure by field experiments on individual wells rather than by arbitrary calculations, the conservation of gas energy and increased ultimate recoveries so obtained, the application of back pressure as a means of water control, and the conclusion that working fluid levels control the bottom hole pressure on wells with low gas factors and low flow velocities. The paper was discussed by L. B. Holland, C. V. Milliken, J. R. McWilliams, Morgan Walker, L. G. E. Bignell and R. Van A. Mills.

EAST CENTRAL TEXAS

CORSICANA, Tex., Oct. 2.—Another small producer was added at Boggy Creek, Anderson and Cherokee when Humble Oil & Refining Co.'s No. 2 T. R. Jones, Jr., started off flowing at the rate of 134 bbls. daily from sand at 3,690 feet. This well was completed early in July, making an estimated 20,000,000 feet of dry gas, but when deepened 3 feet came in for oil. It continues to blow around 10,000,000 feet of gas.

Another wildcat on the Keechi Dome of Anderson County met with failure the past week when J. S. Cosden and associates' abandoned their No. 1 Adams, M. & F. Carroll Survey. The hole was in the Georgetown at 4,003 feet.

Daily average production of East Central Texas the past week was:

EAST CENTRAL TEXAS

Boggy Creek	1,500
Cedar Creek	310
Currie	617
Mexia	6,580
Minerva	310
Nigger Creek	500
Powell	10,382
Richland	480
Thrall	20
Wortham	1,660
Total this week	22,859
Total last week	22,710
Increase	149

BUTLER, PA., 200-BBL. WELL

BUTLER, Pa., Sept. 29.—A 200-bbl. oil well, the largest producer drilled in the Butler County Field in nearly a score of years, was brought in by the Phillips Oil & Gas Co. on the Chester Harvey farm in Buffalo Township. The well is 1½ miles from the old Dawson Pool of Bull Creek, which furnished excitement 20 years ago.

ROCKY MOUNTAIN AREA

(Continued from Page 53)

Weber, formerly field superintendent of the Midwest Refining Co.

The Huntington Park Petroleum Corp. is rigged up and ready to spud on two tests located in the Blanco district of San Juan County. The location in the SE Section 29-30n-9w, the objective of the test being the Farmington gas sand. The operators plan, if sufficient gas is developed in this well, to erect a small gasoline extraction plant and utilize the gas.

The Kutz Canon district of San Juan County is to have one old well deepened in the near future. This test was started about two years ago and carried to a depth of approximately 1,000 feet. The well is located in the SW NE, Section 30-28n-11w. J. T. Beardsley and associates are now moving a standard rig from the Red Mesa district to this well where it is the plan to clean out the old hole and carry it on down.

Actual construction work has been started on the pipe line from the gas wells on the Ute Pasture structure in northern San Juan County, to Durango, Colo. A large number of Navajo Indians have been employed for this work and construction will be carried on as fast as possible.

Colorado

It is reported that the Juanita Oil Co. has picked up some rainbows of oil in a shale at around 500 feet in its test of the Juanita structure, SE SW, Section 4-32n-3w. The Juanita structure is located in Archuleta County, and extends across the state line into Rio Arriba County, New Mexico. The Miley Oil Co. of Los Angeles has contributed considerable drilling equipment to this test by virtue of the fact that it has large lease holdings on the structure.

In Dolores County, the Transcontinental Oil Co. is repairing rig and other equipment in preparation to resuming and deepening its test of the Glade anticline, located in the SE NW, Section 30-41n-16w. The well is bottomed at 3,802 feet. Operations will be resumed as soon as possible in the attempt to complete the well before the winter season.

Texas Production Co. is building road for a new test of the Iles structure, No. 36 Loyd, C SE, Section 21-4n-92w. This well will be an interesting test in that it will be the first well drilled on this section. The location is outside of the proven area for either Morrison or Sundance.

Utah

Operations in Utah during the past week have been of a routine nature, no developments of interest or importance having taken place. The one test in the State which is reaching an interesting depth is that of the Utah Southern and Moab Consolidated's No. 1-A John L. Shafer, Section 36-26s-20e, in Grand County on the Cane Creek structure. This well has attained a total depth of 2,005 feet and pipe is being mudded to shut off water. A barge load of clay which was sent down the river for use in mudding this casing, which is being run to bottom, was delayed arriving at the camp due to the extremely low water in the river which makes operation of boats extremely difficult. Three days were necessary to complete the trip from Moab to the well.

Montana

In the Sunburst Field of Montana, the Hibbing and the Sunburst Oil & Gas Co.'s joint well in Section 1-34-2 came in a gusher of 500 bbls. capacity last week and flowed wild for a time. The well bridged early this week and this has permitted the crew to place a control head and to lay lead lines to the tank battery. As soon as the tanks are placed, the bridge will be drilled out and the well allowed to flow into the storage. This well found its production in the Ellis sand from 1,402 to 1,425 feet. While this well is in a proven area its large size has caused considerable leasing excitement in lands there. The next well to reach the pay in that vicinity will likely be the Bi-State Oil Co.'s in Section 6-34-1, which is due in the sand in the next few days. This well is in a section that is in the next township from that of the Hibbing well, but the Hibbing well is in Section 1-34-2 and the Bi-State well is in Section 6-34-1, so the two wells are in adjoining sections that lie on the edge of each township. Section 6 and 1 always join each other in different townships.

Seventeen wells are now drilling in the Sunburst Field, the operators having drilling clauses in their leases that call for completions this fall, and are getting busy, for cold weather is not far off and a general shut-down in the Sunburst Field is expected as soon as cold weather sets in. There are no new pools being opened and the work is mainly routine.

In the Glendive gas field in eastern Montana, the Montana Dakota Power Co. has completed its twenty-sixth gasser, a 5,000,000-foot well. The company has three strings of tools busy in eastern Montana seeking gas for its recently completed pipe line to Rapid City and intermediate towns in the Black Hills. This line is now serving Rapid City with natural gas.

Cat Creek

In the Cat Creek Field, the Continental Oil Co. has completed its No. 16 on the Wildschultz lease to the first sand and has a producer good for 50 bbls. The Trench Oil Co. will drill a second well on the Morland lease in that field and the Melton-Fenholt well near Winifred is to be brought in shortly, according to reports. A location for a wildcat has been made on the Bull Creek Dome on the north side of the Musselshell River by a syndicate from Lewistown.

The Citizens Gas Co. of Shelby, Mont., has been formed to lay a pipe line from the Sunburst Field to that city.

In the Pondera Field, two new producers were drilled in the past week. The Texas Pacific's No. 4 on the Hirschberg came in as a producer good for 150 bbls. in Section 14-27-4 with the hole bottomed at 1,950 feet. The California Petroleum Co. found a producer good for 80 bbls. in Section 15-27-4 in No. 2 and bottomed the hole at 2,000 feet even. The Montana Power Co. has placed its transmission lines to the field and electric power is now available.

ROCKY MOUNTAIN PRODUCTION
Runs From Field Week Ended September 29

WYOMING

Salt Creek	41,660

(Continued on Next Page)

Big Muddy	2,570
Grass Creek	2,310
Elk Basin	980
Greybull	10
Rock River	2,790
Lance Creek	470
La Barge	670
Poison Spider	820
Hamilton	...
Oregon Basin	4,376
Osage	610
Mule Creek	540
Lander	520
Ferris	...
Byron	30
Lost Soldier	4,030
Simpson Ridge	80
Dutton Creek	50
Alkali Butte	370
Pilot Butte	280
Total Wyoming	62,990
MONTANA	
Cat Creek	1,610
Lake Basin	430
Kev n-Sunburst	8,300
Pondera	280
Total Montana	10,620
COLORADO	
Florence	1,096
Moffat	1,298
Fort Collins	2,590
Ilex Dome	1,507
Rangely	100
Tow Creek	457
Boulder	25
Total Colorado	7,073
NEW MEXICO	
Rattlesnake	192
Hogback	...
Artesia	1,065
Cap Rock	187
Table Mesa	...
Total New Mexico	1,444
Total Rocky Mountain	82,127

OKLAHOMA FIELDS

(Continued from Page 44)

has been completed for 1,000,000 feet of gas in sand at 2,512-19 feet.

Pawnee County

Commercial Drilling Co.'s No. 1 Coples, NE cor. SW NE, Section 31-20-9, is dry and abandoned at 1,115 feet.

Payne County

Pure Oil Co. made location for No. 3 Ramsey, NE cor. SE, Section 7-18-4. Location was also made for No. 1-A Weir, SW cor. NW, Section 8-18-4. Producers & Refiners Corp.'s No. 1 Goss "B," NW cor. SE SW, Section 7-18-5, has been abandoned at 4,138 feet in Turkey Mountain sand.

Stephens County

Pearce & Brown's rig is up for No. 1 Winter, NW cor. SE, Section 10-1s-8w. Nance & Heath built the rig for No. 1 Albright, NW cor. NE SW, Section 27-1-8w. Fossett and others' rig is up for No. 2 Adams, NE cor. NW SW, Section 19-1s-8w. Magnolia Petroleum Co. has the rig up for No. 2 Hanson, NW cor. SW NE, Section 12-1s-4w.

Roy Carter's No. 4 Burke, SE cor. NW SW SE, Section 34-1s-8w, made 30 bbls. from sand at 1,654-72 feet. Fossett and others' No. 1 Adams, NW cor. SW, Section 19-1s-8w, has been completed for 1,000,000 feet of gas in sand at 1,900-40 feet. The Prairie Oil & Gas Co.'s No. 6 Bond, CSL SW SW, Section 7-2s-7w, made 50 bbls. from sand at 1,502-06 feet. George Pace's No. 2 Bristowe "B," NW cor. NE NW NW, Section 18-2s-7w, is pumping 75 bbls. from sand at 1,491-1,523 feet. Murphy Oil Co.'s No. 15 Fobb "B," SE cor. NE NW SW, Section 12-2s-8w, swabbed 97 bbls. from sand at 2,041-76 feet. Magnolia Petroleum Co.'s No. 11 Cook, NE cor. NW SW, Section 30-1-8w, was completed for 46 bbls. in sand at 2,265-68 feet. Winkler & McQueen's No. 1 Heiser, NE cor. NW SW, Section 31-1-8w, has been abandoned at 2,207 feet.

Tulsa County

J. Tutin and others moved a machine to the location for No. 1 Gaskine, CSL SE SE, Section 5-19-10. Ellen Oil & Gas Co. has a machine on the location for No. 1-A E. Nave, NE cor. SW, Section 25-18-14. C. L. Sherman and others' machine is on the location for No. 1 Davis, NE cor. NW NW, Section 9-16-14. Sand Springs Home's No. 3 Jones, CEL NW NE, Section 15-19-11, is dry and abandoned at 1,706 feet.

Hughes County

Transcontinental Oil Co. and others' No. 1 Diamond, SE cor. NW, Section 6-8-10, is dry and abandoned in Wilcox sand at 4,366-72 feet.

Muskogee County

P. Boyle's No. 3 S. Lowery, NW cor. SW, Section 9-15-15, is spudding. Grubbs & Young's No. 2 Friday, SW cor. NW, Section 8-15-15, has been completed for 4,000,000 feet of gas in sand at 1,144-54 feet. J. L. Haner's No. 3 M. Stidham, NE cor. SE SE, Section 8-15-18, is making 1,500,000 feet of gas from sand at 725-741 feet, total depth 900 feet. C. D. Bradley's No. 8 Cumpton, NW cor. Section 8-14-19, is dry and abandoned at 787 feet.

McClain County

Empire Oil & Refining Co. made location for No. 1 Bonner, SE cor. NW NW, Section 29-5-3.

Pontotoc County

Belchic & Laskey made location for No. 1 Crabtree, C NW SE, Section 32-5-7. W. R. Ramsey's No. 2 Millner, NE cor. NW SW, Section 17-5-8, is rigging up to deepen from 2,409 feet. Louisiana Oil Refining Corp.'s No. 16 Perry, SW cor. NW NE, Section 19-5-8, Allen Pool is spudding. Westheimer & Daube's No. 6 Wade, SE cor. NE SW, Section 19-5-8, is a rig under construction.

Dixie Oil Co.'s No. 1 Norman & Fleming, NW cor. SE NE, Section 13-5-4, swabbed 30 bbls. from Viola lime at 2,530-2,623 feet. Homaokla Oil Co.'s No. 6 Berry, SW cor. SE NE, Section 19-5-8, Allen Pool, was completed for 400 bbls. in Cromwell sand at 2,739-2,803 feet. W. R. Ramsey's No. 1 fee, SW cor. NW NE, Section 6-4-7, is dry and abandoned at 3,558 feet in Simpson sand. Douglas Oil & Gas Co.'s No. 1 Johnson, C NW NW, Section 10-3-8, is dry and abandoned at 3,165 feet.

Pottawatomie County

Empire Oil & Refining Co. and Amerada Petroleum Corp.'s No. 1 Bullock, NE cor. NW, Section 8-9-5, Earlsboro area, is a rig under construction. Phillips Petroleum Co. has the cellar dug for No. 1 Keenan, SE cor. Section 6-8-5, Maud area. Phillips Petroleum Co. and others made location for No. 1 Hallum, NE cor. NW, Section 19-8-5. Independent and Darby's rig is being built for No. 4 Wallace, SE cor. SW SW, Section 14-7-4, St. Louis Pool. C. J. Wrightsman has the rig on the ground for No. 1 Bettis, SE cor. Section 17-7-4. McCulloch Oil Co. made location for No. 7 Bruno, NW cor. SE NE, Section 25-7-4. Barnsdall Oil Co.'s No. 1 Daniel, NE cor. SW SW, Section 29-7-5, is rigging up. No. 2 Daniel, NW cor. SW SW, Section 29-7-5, is rigging up.

The Texas Company's No. 1 Johnson, SW cor. NE SW, Section 29-7-5, is rigging up. Independent Oil & Gas Co. and McCulloch Oil Co.'s No. 2 Mahtat-Was, NE cor. SE, Section 30-7-5, is a rig. The rig is being built for No. 3 Mahtat-Was, SE cor. NE SE, Section 30-7-5. No. 4 Mahtat-Was, SW cor. NE SE, Section 30-7-5, is a rig on the ground. T. B. Slick's No. 4 Smith, SW cor. NW SE, Section 30-7-5, is a rig under construction. The Texas Company is building the rig for No. 1 Zoeller, NW cor. SW SE, Section 30-7-5. The Prairie Oil & Gas Co. is building the rig for No. 1 Campbell, SE cor. SE SW, Section 18-8-5.

Interocean Oil Co.'s No. 4 McGee, NW cor. SE, Section 23-7-4, made 400 bbls. from Hunton lime at 3,710-3,868 feet. No. 5 McGee, SW cor. NE SE, Section 23-7-4, swabbed 858 bbls. from Simpson sand at 4,155-83 feet. Blackwell Oil & Gas Co.'s No. 1 Lewis, SW cor. NE, Section 24-7-4, made 170 bbls. from Simpson sand at 4,356-4,426 feet. Magnolia Petroleum Co.'s No. 1 Wilbarn, SW cor. SE, Section 24-7-4, was completed for 224 bbls. in Simpson sand at 4,134-45 feet. Sinclair Oil & Gas Co.'s No. 5 Blandin, SW cor. NW SW, Section 24-7-4, swabbed 405 bbls. from Simpson sand at 4,172-4,201 feet.

Blackwell Oil & Gas Co.'s No. 4 Cherry, NE cor. Section 25-7-4, made 290 bbls. from Simpson sand at 4,350-84 feet. Gypsy Oil Co.'s No. 1 Bruno, SE cor. NE NW, Section 25-7-4, was completed for 240 bbls. in Simpson sand at 4,466-90 feet. Phillips Petroleum Co.'s No. 1 Cherry, SW cor. NW NE, Section 25-7-4, topped Wilcox sand at 4,295 feet, drilled to 4,300 feet, then plugged back to 4,210 feet and made 20 bbls. Magnolia Petroleum Co.'s No. 4 Hembree, SW cor. SE, Section 19-7-5, flowed 5,320 bbls. from Wilcox sand at 4,150-86 feet. Sinclair Oil & Gas Co.'s No. 1 Kitch-ee, NW cor. SW, Section 19-7-5, made 1,560 bbls. from Hunton lime at 3,710-82 feet.

Seminole County

Magnolia Petroleum Co. made location for No. 1 Nevins, SE cor. SW SE, Section 32-10-6. The rig is under construction for No. 2 Nevins, NE cor. SE SE, Section 32-10-6. Red Bank Oil Co. made location for No. 2 Sango, SE cor. NE NE, Section 1-9-5, Earlsboro Pool. Skelly Oil Co.'s No. 3 Mayes, NE cor. SE NE, Section 1-9-5, is rigging up. No. 3 Shepherd, NW cor. SW NW, Section 6-9-6, is also rigging up. Skelly Oil Co. and Atlantic Oil Producing Co.'s No. 1 Lottie, SW cor. NW NW, Section 6-9-6, is rigging up. T. B. Slick has the cellar dug for No. 1 Jones, NE cor. Section 4-9-7.

Papoose Oil Co.'s No. 1 Island, SE cor. SW NW, Section 2-9-7, is being deepened from 3,388 feet and now fishing at 3,550 feet. T. B. Slick has the rig on the ground for No. 1 Smith, SE cor. SW SW, Section 31-8-7. Marland Oil Co. has built the rig for No. 1 Lacke, SE cor. NE SW, Section 32-8-7, East Little River. Roxana Petroleum Corp. has the rig up for No. 1 Jeffries, NE cor. SE SW, Section 32-8-7. The rig is also up for No. 2 Jeffries, SE cor. SW, Section 32-8-7. The rig is under construction for No. 4 Johnson, SE cor. SW NW, Section 13-7-6, Little River Pool. T. B. Slick is building the rig for No. 2 Reed, SW cor. SE NW, Section 13-7-6. Marland Oil Co. and Shaffer Oil & Refining Co.'s rig is up for No. 1 Harris, SE cor. SW, Section 4-7-7.

Gypsy Oil Co. made location for No. 1 Payne, NW cor. NE NE, Section 5-7-7. Mid-Continent Petroleum Corp. has built the rig for No. 2 Smith, NE cor. NW NE, Section 5-7-7. T. B. Slick is erecting the rig for No. 1 Chilcoat, NW cor. NE, Section 9-7-7. Sunray Oil Co. is building the rig for No. 1 M. Harjo, SE cor. SW SW, Section 7-5-8, Allen Pool. Magnolia Petroleum Co. moved the rig out for No. 3 Reed, SE cor. SW NW, Section 17-5-8. Indian Territory Illuminating Oil Co.'s No. 2 Fleet, SE cor. SW, Section 18-5-8, is spudding. No. 3 Fleet, NE cor. SE SW, Section 18-5-8, is rigging up.

Magnolia Petroleum Co.'s No. 5 Simpson, SE cor. NW SE, Section 10-9-5, Earlsboro Pool, has been completed for 550 bbls. from Earlsboro sand at 3,600 feet after plugging back from 4,377 feet in Wilcox sand. Gypsy Oil Co.'s No. 1 C. Brown, SE cor. SW, Section 33-8-6, swabbed 1,202 bbls. from Wilcox sand at 4,678-83 feet. Barnsdall Oil Co.'s No. 1 Walker, NE cor. NW, Section 4-7-6, made 620 bbls. from Wilcox sand at 4,592-98 feet. Carter Oil Co.'s No. 3 Thomas, SE cor. NE SE, Section 11-7-6, Little River Pool, was completed for 970 bbls. on swab from Wilcox sand at 4,261-66 feet.

Roxana Petroleum Corp.'s No. 2 Johnson, NE cor. SW NW, Section 13-7-6, made 1,470 bbls. from Wilcox sand at 4,281-95 feet. T. B. Slick's No. 1 Reed, NW cor. SE NW, Section 13-7-6, swabbed 1,500 bbls. from Wilcox sand at 4,243-85 feet. Gypsy Oil Co.'s No. 7 Hulhoke, SE cor. SW SE, Section 14-7-6, made 965 bbls. from Wilcox sand at 4,589-97 feet. Independent Oil & Gas Co.'s No. 5 Tewee, NE cor. NW SE, Section 14-7-6, had Wilcox sand at 4,260-76 feet and made 878 bbls. Sinclair Oil & Gas Co.'s No. 2 Tewee, SW cor. NE, Section 14-7-6, made 1,890 bbls. from Wilcox sand at 4,313-38 feet.

Barnsdall Oil Co.'s No. 1 Williams, NE cor. SW NE, Section 15-7-6, has been abandoned at 4,528 feet. No. 2 Williams, SE cor. NW NE, Section 15-7-6, is dry and abandoned at 4,190 feet; Independent Oil & Gas Co.'s No. 1 Williams, SE cor. NE NE, Section 15-7-6, is dry and abandoned at 4,870 feet. No. 2 Williams, NE cor. Section 15-7-6, made 1,495 bbls. from Wilcox sand at 4,350-51 feet, the original production being 1,705 bbls. at 4,351 feet. T. B. Slick's No. 9 Williams, SE cor. NW SE, Section 15-7-6, is dry and abandoned at 4,730 feet. Gypsy Oil Co.'s No. 2 Canar, NE cor. Section 22-7-6, has been abandoned at 5,375 feet. No. 3 Cotcha, NE cor. NW SW, Section 23-7-6, made 1,132 bbls. from Wilcox sand at 4,329-38 feet. No. 4 Cotcha, NW cor. NE SW, Section 23-7-6, has been completed for 1,130 bbls. in Wilcox sand at 4,350-58 feet.

Independent Oil & Gas Co.'s No. 3 Harris, SE cor. NW NW, Section 23-7-6, swabbed 855 bbls. from Wilcox sand at 4,368-82 feet. No. 4 Harris, NW cor. SE NW, Section 23-7-6, swabbed 370 bbls. from Wilcox sand at 4,280-94 feet. Sinclair Oil & Gas Co.'s No. 2 Amos "C," SE cor. NE SW, Section 7-5-8, Allen Pool, made 455 bbls. the first 13 hours from Wilcox sand at 4,158-60 feet and was then pinched to 50 bbls. a day. Gypsy Oil Co.'s No. 7 Peter, SW cor. SE NW, Section 18-5-8, made 75 bbls. on the pump from Cromwell sand at 2,693-2,716 feet. No. 8 Peter, NW cor. SE NW, Section 18-5-8, swabbed 48 bbls. from Cromwell sand at 2,685-2,721 feet. Producers & Refiners Corp. is digging cellar for No. 1 Lusty, NE cor. NW, Section 5-7-7.

Sinclair Oil & Gas Co.'s No. 3 Nakotche, SE cor. NE SW, Section 18-5-8, made 560 bbls. from Cromwell sand at 2,655-2,737 feet. The Texas Company's No. 2 Lucy, NE cor. SW SE, Section 18-5-8, has been completed for 1,650 bbls. in Cromwell sand at 2,552-2,640 feet. The Prairie Oil & Gas Co.'s No. 5 Sunny, NE cor. NW NW, Section 14-7-6, Little River Pool, made 2,210 bbls. from Wilcox sand at 4,252-70 feet. No. 7 Sunny, SW cor. NE NW, Section 14-7-6, made 1,930 bbls. from Wilcox sand at 4,262-65 feet. No. 6 Gibson, NW cor. SE NW, Section 14-7-6, was completed for 1,405 bbls. in Wilcox sand at 4,264-76 feet. No. 4 Gibson, SE cor. SE NW, Section 14-7-6, had Wilcox sand at 4,257-63 feet and flowed 1,405 bbls.

Wagoner County

J. E. Martin's No. 1-A Orcutt, NW cor. NE, Section 35-18-15, is rigging up. Vinita Development Co.'s No. 2 Williams, NW cor. SE SE, Section 35-17-17, is drilling at 560 feet. F. L. Beam and others moved a machine to the location for No. 1 Ford, SW cor. NE, Section 24-16-17.

REPRESSURING BOWLEGS POOL AT SEMINOLE

(Continued from Page 29)

tures of this sort of work, and when the oil can be eliminated, and the hole cleaned sufficiently to permit the gas to have easy access to the sand face at the bottom of the well repressuring work is believed to be greatly assisted.

Sent Through Casing

Another novelty in the work of the Indian Territory experiment is that the gas is not passed down to the sand through a string of tubing, but is sent directly down through the casing. This is believed to be the first time in Seminole that the method has been used. The change in practice has apparently been satisfactory as no leaks or bypasses have been reported. In the No. 7 Goforth well, as in many other wells in the Bowlegs Pool, the last string of casing was run part way in the Viola limestone. This formation carried no oil or gas in this well. The string was cemented in the regular manner, and a good shutoff was evidently obtained, since the string shut off some water which was being carried at the time of casing, and during the productive period of the well no water even broke in on the well. During the time the well was used on the air lift no oil escaped and came up around the outside of the casing.

The pressure at which the gas is sent down to the sand is 150 pounds, and if the water behind the pipe had accumulated and was a high column, it would exert a pressure greater than this figure. For shut-off conditions therefore, the well must be assumed to have a good condition, and all the gas which is introduced through the key well, must be considered as going directly down into the sand.

There are nine wells on the drawing which accompanies this story, and the injection well is marked with a double circle. The other eight wells are either direct or diagonal offsets, all of which are approximately 660 feet distant from the injection well. Goforth Nos. 3 and 9 are air lift wells. Walker No. 1 is

an air lift well; and Carter Oil Co.'s No. 1 Harjoche, and Empire's No. 2 Lacy are air lift wells. Five of the eight offsets are air wells. No. 4 Goforth and Carter Oil Co.'s No. 3 Harjoche are both pumping wells, and Indian Territory's No. 5 Walker is cleaning out and is not now on production.

Out of the eight wells, it is singularly noticeable that the air lift wells show the best results from the effect of the repressuring work. The pumping wells on account of their irregularities in production due to the necessary changes in cups and other shutdowns, give small chance for the maintaining of adequate production records and changes, while the well which is being cleaned out has been off production, and therefore only limited records of the effect which repressuring had on this well are available.

Gas-Oil Ratio

The input and output meters on the wells show that there has been almost no increase in the gas-oil ratio of the wells with the exception of the Carter Oil Co.'s No. 1 Harjoche which is showing a small increase in the amount of gas.

When the repressuring work was started, it required 15 days running the gas down into the sand before any noticeable change in the oil production of the wells took place. The amount of gas which was injected each day was 500,000 feet, and it is sent down to the sand at a pressure of 150 pounds. It therefore required 7,500,000 feet of gas to make any change in the conditions of the adjoining wells. At the time of the start of repressuring all of the wells in this section were on the decline and had been in that condition for some time. The decline was arrested in all cases excepting the Empire Oil & Refining Co.'s No. 2 Lacy.

The wells which have showed the best increases in daily oil production after the expiration of the first 15 days are the Indian Territory's Nos. 3 and 9 Goforth. These wells have been uniform in making more oil since the introduction of repressuring. The Indian Territory's No. 1 Walker has showed a slight increase per day, but not as much as the wells mentioned above. No. 5 Walker, on account of being cleaned out, offers very limited information which is insufficient to establish any comparisons. Empire's No. 2 Lacy continues to decline as mentioned above. The Carter Oil Co.'s No. 1 Harjoche shows a small increase in daily oil production and also a slight increase in the gas per day. The Carter Oil Co.'s No. 5 Harjoche has showed practically no change.

The cost of installing the equipment used in this work was negligible. One unit of an air lift plant was idle on the Goforth lease and it was employed to compress the gas. For transmission of the gas from the compressor to the casinghead the old flow line of the well was used and the gas introduced to the well through it.

While the results obtained thus far in the repressuring work have been encouraging, according to the engineers in charge, there remains a great deal for the future to disclose for the operation has been installed a very short time.

Gas Required

The gas problem might present the only discouraging phase of this experimental work. If it requires 500,000 feet of gas per day to perform this work on eight wells, this is an average of 62,500 feet of gas per well per day. Contemplating that this work might be tried out on a larger scale, and realizing that there are now 1,000 wells in the Greater Seminole Field which might be considered ready for this work, it would require 62,500,000 feet of gas per day to carry this work out on a large scale. Greater Seminole might have some trouble assembling this gas and to purchase the gas would almost place the process outside the pale of profit.

The progress of this work will furnish some interesting chapters to the history of the Greater Seminole area and will probably exert some influence upon the Oklahoma crude oil situation.

PRESSURE METHODS OF CONTROLLING OIL

(Continued from Page 34)

and the downstream pressures maintained low enough to give critical velocity through the bean, insuring constant pressure regulation, and preventing slippage back through the bean. A definite case of slippage through a flow bean was encountered when holding an upstream pressure of 500 pounds and a downstream pressure of 420 pounds, on a well flowing 80 bbls. of oil and 1,200,000 feet of gas through 6¼-inch casing. When the downstream pressure was reduced the bean was closed to maintain the 500 pounds upstream pressure. Reducing the downstream pressure to 380 pounds increased oil production 100 per cent without changing the gas production.

Tubing packers set low in the hole are preferable on naturally flowing wells which produce small volumes of gas and oil, as wells of this type start easier and flow more steadily than when packed off at the well head. On larger wells, packing off at the head is advisable for both mechanical and control reasons.

Gas Lift Method

Gas lift has proved to be the most flexible and satisfactory method of controlling pressures within a well. Wells which flow naturally can often be gas lifted with much lower natural gas factors and without decreasing the rate of production. The energy thus conserved, more than compensates for the increased operating cost. Wells which appear similar in all respects may be affected differently as to natural gas factor when changed from natural flow to gas lift without regard to gas conservation. The proper time for such a change may be estimated accurately from test data taken while flowing naturally through tubing packed off at the head. On wells flowing through casing, an indication of the time for change can be had by noting the sensitivity of the well to back pressure adjustments, but in many cases can be positively ascertained only by gas lift installation and subsequent pressure and volume experiments.

Tubing Design

The determination of the proper size or sizes of flow tubing for either naturally flowing or gas-lift wells is a problem to which the writers have found no satisfactory mathematical solution. The use of tapered tubing has not been advocated until such a formula is available, as the benefits obtained do not compensate for the risk of running an improperly tapered string.

The proper size of a string of straight tubing can be estimated with fair accuracy from the results obtained on similar wells and can be positively ascertained by a pressure test after installation, when both tubing and casing head pressures are available.

The depth of tubing is an important adjustment in gas-lift wells with high working fluid levels, and in naturally flowing wells with high gas factors. In the former case, submergence must be adjusted to obtain the desired bottom hole pressure, while in the latter case, entry losses and slippage are thought to be the controlling factors.

Control Tests

Tests can be made to determine the suitability of the installed flow tubing, the proper outlet pressure adjustment, and in the case of gas-lift wells, the proper input volume. All three of these adjustments are interdependent and must be combined in a correct relationship. On naturally flowing wells the outlet pressure is varied throughout the required range, to obtain the resultant changes in oil and gas production. On gas-lift wells the input volume is varied while holding the outlet pressure constant at each of several pressures, and then the outlet pressure varied while holding each of several input volumes constant. By taking accurate measurements of oil and gas production, the point of minimum gas-oil ratio is obtained.

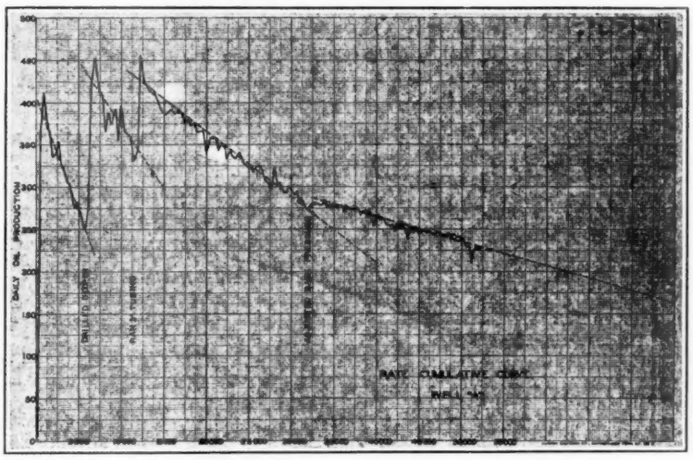


Figure 3—Cumulative oil production.

The trend of the curves plotted from these data indicate the suitability of the tubing size. The major indication of too large a tubing is a sharp downward break in the oil production curve when plotted against outlet pressure. An indication of too small a tubing is had when the oil production is gradually decreased by increasing the outlet pressure but the natural gas factor simultaneously increased. In making this determination on gas-lift wells, the data used should be that obtained with the most satisfactory input volume.

The time required for making these tests on flush wells or wells with low natural gas factors is surprisingly short. It has been found that by making the pressure adjustments in small increments that these types of wells arrive and settle down at their new condition within a few hours so that sufficient data can be obtained within three or four days.

Old wells and wells with high gas factors require considerably more time to settle down to new conditions. In these cases the normal rate of decline is low enough not to affect the accuracy of the test and plenty of time is usually available.

When flush wells are declining noticeably the oil and gas production data may be plotted in per cent deviation from the projected normal curves rather than in absolute values, with satisfactory results.

The importance of accurate oil and gas production measurements cannot be overemphasized while making these tests. There is conclusive evidence that well cannot be pinched indiscriminately to any desired rate of production without the risk of simultaneous waste of gas energy and a resultant decrease in ultimate recovery of oil.

Pressure Control of Pumping Wells

The gas factors of pumping wells have been varied over wide ranges by the control of fluid levels and also by the use of pumping packers. Fluid levels have been controlled successfully by changing pump submergence and by changing the rate or period of pumping. Pumping packers have been used to decrease the bottom hole pressure on wells which can-

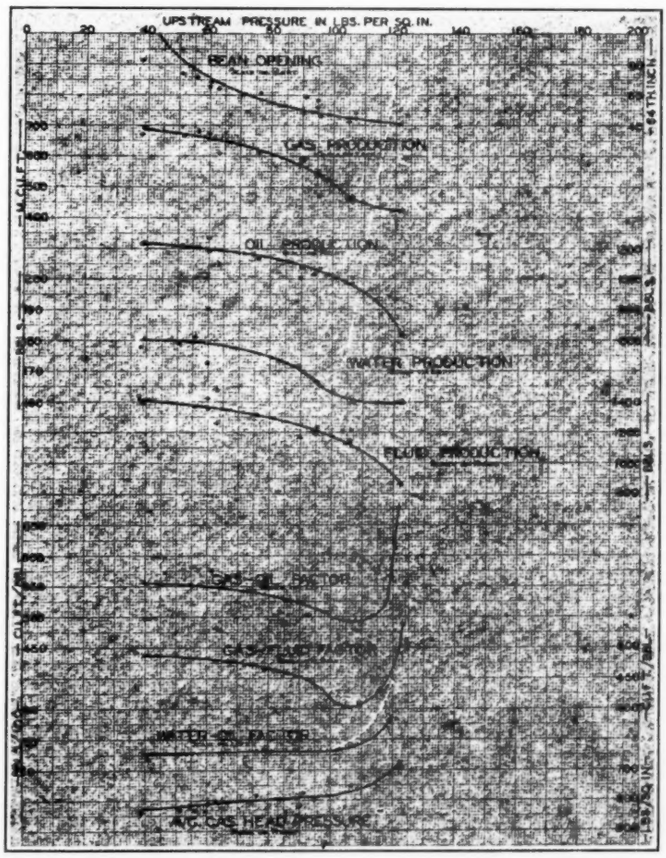


Figure 4—Pressure control test flowing through 2½-inch tubing, total depth 4,282 feet, tubing at 4,255 feet, cage between first and second joints.

not be pumped off. There is need for more data on pressure control of pumping wells, particularly on those producing from thick sands with low rock pressures.

Water Encroachment

In the majority of flowing wells, approach of edge water is indicated by a sharp rise in flow temperature and a tendency for the natural gas factor to decrease spontaneously. Allowances must be made in the interpretation of flowing temperatures for changes in temperature of input gas on gas-lift wells. Changes in back pressure also change temperature readings due to gas expansion and must be discounted.

In cases where temperature or gas factors indicated the approach of water, the highest back pressures, permissible with low gas factors, have been held with ostensibly excellent results, as these wells did not go to water as fast as similar but uncontrolled wells. Results of this kind cannot be conclusive as there is no suitable basis for absolute comparison, but they are at least strongly indicative.

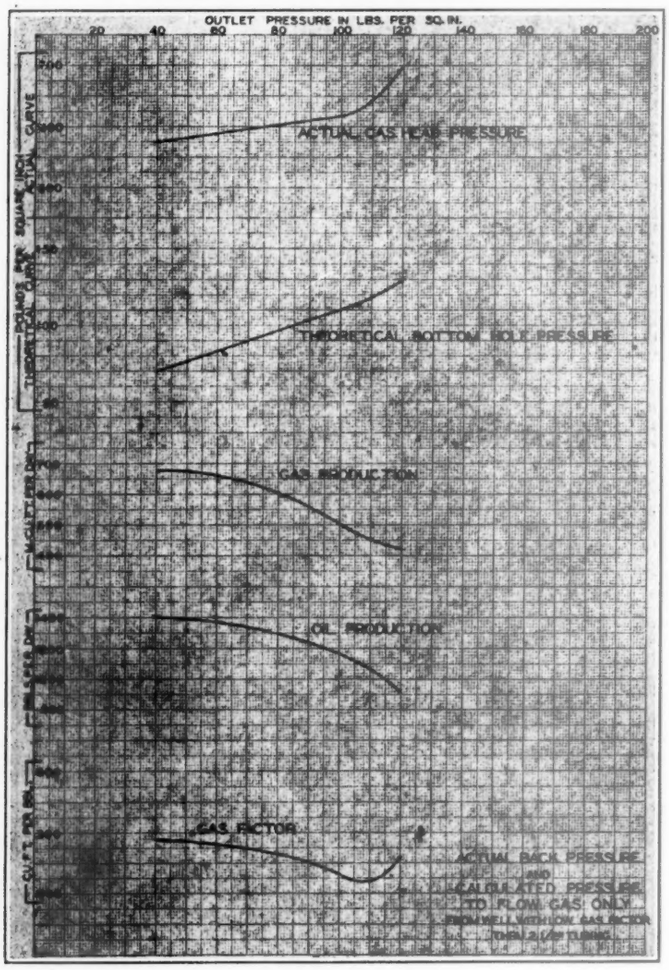


Figure 5.

After wells start producing some water, the water-oil ratio often may be varied appreciably by pressure control. In one case a well which was swabbing 50 bbls. of water with 600 bbls. of oil was placed on the gas lift and the water entirely eliminated for 23 days, even though the oil production was increased to 700 bbls. per day. In many cases the water-oil ratio has been decreased materially and held down through control of bottom hole pressures by changing submergence or outlet pressures.

Figure No. 4 presents the pressure control test of a naturally flowing well which was making water. It is noted that although the rate of water production was decreased by back pressure, the water-oil factor was increased. The change in rate of increase of this water-oil factor closely correlates with the point of minimum gas factor. It has been found that in most cases, the points of minimum factors roughly coincide so that a decision is not often required as to whether a well should be produced with a minimum gas-oil factor or a minimum water-oil factor.

Controlling Sand Troubles

Wells making excessive amounts of sand can often be handled economically by increasing flow velocities to a point where the sand can be removed. The use of gas lift has been most satisfactory for this purpose as high velocities can be obtained without necessity of serious alteration in pressure conditions.

A method of cleaning out flowing wells by circulation has been found to be adaptable where periodic formations caving is encountered. Water was lubricated into the input gas in slugs of 2 bbls. each. This water caused emulsions to form in the bottom of the hole. The viscosity and density of the emulsions were such that they removed the cavings from the hole. Figure No. 5 is the production and control data for the later life of the well shown in Figure No. 1. Early in February the accumulation of cavings in the hole caused the input pressure to rapidly increase with a corresponding decrease in oil production. Heat generating chemicals were lubricated into the input gas as the well appeared to be choked with paraffin. Successful results were obtained with the chemical as the pressure immediately returned to normal. After two more similar treatments it was found that the water introduced with the chemical was alone responsible for the benefits obtained and in successive cases water only was used. The use of this method avoided an expensive and detrimental cleaning out job and is believed to have prolonged the gas-lift life of the well by at least six months, as the well is still producing approximately 400 bbls. per day on gas lift.

It has been found that in many cases uninterrupted operation is essential to long life on gas lift. Wells which have been frequently shut down and started with high pressures have not given results equal to those which were kept in continuous operation. Wells may be permanently injured by high starting pressures. Unloading with a swab or breaking out by stages is recommended for use in cases where this danger exists, as a few hours extra production will not compensate for the possible damages.

Effects of Outlet Pressure

Some of the data taken within the course of operation and testing of wells have supplied some interesting indications of what happens within a well when pressure is applied at the outlet. Conclusive evidence has been obtained regarding the presence of working fluid levels in wells with low gross gas factors. In these wells there is a constant column of oil in the hole through which the gas bubbles and from the top of which the oil produced is picked up as a spray. In one well flowing 20 bbls. per hour naturally with a gas factor of 550 cubic feet per barrel the pressure at a depth of 3,200 feet was found to be 820 pounds while at a depth of 3,600 feet it was over 950 pounds, a difference of 130 pounds per square inch for a 400-foot column of fluid. When the fluid column was lightened by the circulation of gas the pressure at 3,200 feet was only 300 pounds, although the oil production increased to 30 bbls. per hour.

The working fluid level may be raised or lowered by changing the velocity of flow. In this case the bottom hole pressure is not affected directly by the outlet pressure, but is affected by the flow slippage due to velocity which is controlled by the outlet pressure. This slippage affects the height of fluid level which automatically regulates bottom hole pressure to the point where an amount of oil, capable of being lifted at a corresponding velocity, is produced. An example of this case is shown by Figure No. 6 which shows a comparison of casing head pressure used as an index to the trend of bottom hole pressure, and the calculated pressure required to flow the gas only. Above approximately 100 pounds outlet pressure, the casing head pressure increases rapidly while an enlarged scale is necessary to notice the difference in trend of theoretical pressure. It is thought that slippage was obtained at about 100 pounds outlet pressure where the well head velocity was approximately 26 feet per second and the bottom hole velocity approximately 6.5 feet per second.

A study of flow velocities has indicated a hyperbolic relationship between the velocity at the well head corresponding with the point of slippage and the gas-oil ratio calculated at the absolute pressure in the well outlet. The numerical values of the curves vary with different sizes and depth of tubing, outlet pressures and gravity of gas and oil.

From the mass of flow data now being accumulated in the Mid-Continent, empirical curves could be compiled on slippage velocities and pressure drops for the vertical flow of oil-gas mixtures in pipes. Such a set of curves would be of great economic value to the industry, as an aid to lower operating costs and higher oil recovery.

Summary and Conclusions

1. Pressure control does not always necessitate reducing the daily rate of or the deferring of production. Gas energy can be conserved without the co-operation of offset operators, by intelligent control, but more uniform and better results are secured with co-operation.

2. When control is applied during the flush period, oil production deferred by pressure control, is returned within the early life of the well.

3. The minimum gas factor coincides so closely with the most economic gas factor, that in the majority of cases, no practical distinction can be made.

4. The design of connections, at the top of the well, influences the results obtainable. All flow line bends should have the convex side upward.

5. Gas lift is the most flexible method of pressure control.

6. The suitability of an installed string of flow tubing can be determined accurately by test methods.

7. Tests can be readily conducted to determine the proper pressure adjustments.

8. After a well is properly adjusted, few subsequent adjustments are necessary until the method of operation is changed.

9. Well cannot be pinched indiscriminately to any desired rate of production without danger of dissipating gas energy.

10. Water-oil factors may be controlled in the same manner as gas-oil factors.

11. Sand troubles may be alleviated considerably by gas-lift control and water circulation.

12. The relation of outlet back pressure to bottom hole pressure is not direct, except in wells with high gas factors and high flow velocities.

13. Working fluid levels control the bottom hole pressure on wells with low gas factors and low flow velocities.

14. Continuous and steady operation of the average well is thought to be insurance against a short and uneconomical producing life.

ENGINEERING PROBLEMS SUBJECT TO DISCUSSION

(Continued from Page 30)

foot pounds. Our gas has a specific gravity of .59. Does this gas have less or more foot pounds of energy at the 100 pounds gauge pressure than air at that pressure? We know the law of a perfect gas is that it varies inversely in volume in proportion to the absolute pressure, and we are frank to admit that we do not know the effect of the specific gravity of the gas.

"The temperature of the gas and fluid when it comes from our wells is about 90 to 100 degrees Fahrenheit. If there is a variable fraction or factor for increase of temperature above either 60 or 32 Fahrenheit, we would appreciate the information."

EFFICIENCY PROBLEM DISCUSSED

By T. A. Hall, Chief Engineer, Tidal Oil Co.

Natural gases, not being "perfect gases," do not follow Boyles Law in the relation of pressure to volume; in other words, P V does not equal a constant.

The method for calculating this deviation is given fully in Bureau of Mines Technical Paper No. 158.

Calling this correction factor "C," Lichty shows the relation to be:

$$\frac{V_1}{V_2} = \left(\frac{P_2}{P_1}\right)^{\frac{1}{S}} \text{ where}$$

$$S = \frac{\text{Log}\left(\frac{P_2}{P_1}\right)}{\text{Log}\left(\frac{P_2}{P_1 C}\right)}$$

The deviation being dependent on percentages of the various constituents of any gas, a complete analysis must be had for each different gas in question.

In general, for average natural gases, the deviation is not a considerable amount and for commercial purposes P V is considered constant.

With P V = constant, the molecular energy would be equal for all gases, so the energy contained is irrespective of the weight of the gases and for isothermal compression or expansion is irrespective of the temperature at which it takes place. This statement together with the calculations submitted herewith will fully answer the questions under consideration.

Under these conditions, the work, per cubic foot (measured at one atmosphere) for isothermal compression or expansion is given by the following:

(1) Foot-pounds = 144 P V Log_e R

(2) or = 331.57 P V Log_{10} R

in which

R = The ratio of expansion or compression pressures, in this case

$$\frac{100 + 14.4}{0 + 14.4}$$

Substituting in (2) the conditions of the

problem submitted: viz, one cubic foot of air through pressure range of atmosphere (14.4 pounds absolute) to 100 pounds gauge.

$$\text{Ft.-pounds} = 331.57 \times 14.4 \times 1 \times \log_{10} \frac{100+14.4}{0+14.4}$$
$$= 4,774.608 \text{ Log } 7.944$$
$$= 4,297.3$$

The value of 4,349 as given in the problem is the result of using an atmospheric pressure of 14.7 pounds per square inch.

To be accurate, the value used for atmospheric pressure should be the atmospheric pressure at the point in question.

IMPORTANCE OF SAMPLING EXPLAINED BY WARNEN

(Continued from Page 123)

in per cent by volume is in comparing actual plant production against potential production. In order to accurately define such a composition the base temperature and the coefficient of expansion for the particular sample must be added. Construction of equilibrium diagrams requires the data in per cent by weight, absorption diagrams require it as pounds of solute per pound of solute free solvent. It is from application of such data that the greatest economic gain in plant design and operation can be expected. Greater precision is possible by weighing than by volumetric measurement. For these reasons all liquid samples should be reported as per cent by weight.

Liquid sample bombs should be constructed of metal, preferably steel, to withstand the maximum vapor pressures or working pressures to be encountered. Saving in weight, size, but principally freedom from leakage of vapor is attained in the bomb using a vent at the top, sealed by a lead washer under the head of a cap screw.

The liquid to be sampled should be passed upward over a drying agent and the air displaced from a bomb of proper size for a single analysis at the full pressure available, followed by a thorough purging to insure the bomb sample being representative. A vapor space of one or two per cent should be provided by draining liquid from the bottom valve to protect the bomb against fracture upon expansion. Such vapor space is unnecessary if the temperature during sampling exceeds that to which it will be subjected before analysis.

Dependable Samples

It is indeed fortunate that lean absorption oil is so easily and accurately sampled, since from a study of this material most important information for operation and plant design is to be obtained. It is also fortunate that residue gas may be accurately sampled, for when correlated with the lean absorption oil data, the basis for constructive interpretation of absorption laws is laid. When further correlated with analysis of finished gasoline, important plant operating conditions may be defined.

Summary

To sum up, several fairly definite conclusions may be drawn. Briefly, they are:

1. Regardless of how much pains may have been taken in a gas or gasoline analysis and in the computation of the data, the final result is no better than the accuracy of the sample which is the starting point.

2. The dependability of fundamental analytical data may be judged by the consideration and weighing of certain rather definite "dependability factors" which have been discussed.

3. Commodities which are definitely single phase are most easily handled both in plant and laboratory and analytical data from samples of such commodities are most dependable.

4. Specifically, lean absorption oil, plant residue gas and stable production gasoline lend themselves to very accurate analysis and also yield the most valuable data from the standpoint of both plant design and operation.

5. Liquid samples should be taken in unit containers designed for a particular service so that the entire contents of the container may be transferred into the analytical apparatus without loss or contamination.

6. Sampling and analytical procedure should be so co-ordinated that the final result will be in terms most convenient for application.

PANHANDLE FIELDS

(Continued from Page 39)

Waggoner-H made 218 bbls. at 1,849-91 feet. Hampton & Wilson's No. 2 Waggoner was dry and abandoned at 1,925 feet. Hawkins, Hester and others' No. 1 Waggoner was dry and abandoned at 1,300 feet. Lawson's No. 6 Waggoner-B was shot with 10 quarts at 2,328-39 feet and made 20 bbls. Ramming & Saunders' No. 1 Waggoner was dry and abandoned at 2,450 feet.

Young County

Paull Oil Co.'s No. 1 Thompson made 200 bbls. at 2,060-2,100 feet. Pitzer & West's No. 1 Thigpen was dry and abandoned at 2,260 feet. Mook & Texas' No. 8 Davis made 25 bbls. at 539-64 feet. Panhandle Refining Co.'s No. 1 Willett was dry and abandoned at 1,564 feet. Riggs and others' No. 15 McKinley made 30 bbls. at 550-79 feet. Their No. 16 McKinley made 26 bbls. at 548-76 feet. Shappell Oil Co.'s No. 4 Garrett was dry and abandoned at 851 feet. Tidal Oil Co.'s No. 3 Garrett made 20 bbls. at 548-56 feet. Wolfe's No. 5 Lowe was dry and abandoned at 896 feet. Amerada Petroleum Corp.'s No. 1 Wilkerson was dry and abandoned at 805 feet. Atkinson & Sandifer's No. 4 Ford was temporarily abandoned at 2,630 feet. Canyon Oil & Gas Co.'s No. 1 Graham was temporarily abandoned at 2,183 feet. Jacob Oil & Gas Co.'s No. 1 Sayers was dry and abandoned at 4,164 feet. Paull Oil Co.'s No. 2 Allen was shot with 30 quarts at 2,080-92 feet and made 10 bbls. Their No. 3 Morrison was dry and abandoned at 2,374 feet. Albright & Kerbou's No. 1 Swain was dry and abandoned at 745 feet. Callender's No. 1 Davis was temporarily abandoned at 889 feet. Cooper & Britton's No. 1 Parrish made 46 bbls. at 1,089-99 feet. Hall and others' No. 1 Johnson made 36 bbls. at 500-10 feet. Halsell's No. 1 Marshall was dry and abandoned at 844 feet. Kennedy and others' No. 1 Johnson was dry and abandoned at 600 feet. Kleiner and others' No. 25 Langston made 40 bbls. at 533-68 feet. Their No. 4 Davis made 131 bbls. at 552-65 feet.

RANGER DISTRICT
Week Ended September 29
Brown County

Humble Oil & Refining Co.'s No. 24 Hickman made 5 bbls. at 1,243-60 feet. Kone Production Co.'s No. 16 Hickman was shot with 30 quarts at 1,233-45 feet and made 20 bbls. Mitcham and others' No. 1-C Keeler was dry and abandoned at 1,050 feet. Kerr and others' No. 2 Boysen was shot with 212 quarts at 1,607-1,764 feet and made 3,000,000 feet of gas.

Callahan County

Prairie Oil & Gas Co.'s No. 1 Klutts made 3 bbls. after having been shot with 10 quarts at 1,730-40 feet. Swoveland and others' No. 1 Sealy was dry and abandoned at 1,008 feet.

Coleman County

Bradstreet and others' No. 1 Wheatley was dry and abandoned at 2,200 feet. Continental Oil Co.'s No. 8 Overall made 3,000,000 of gas at 755-56½ feet.

Eastland County

Texas Pacific Coal & Oil Co.'s No. 19 Brewer made 3 bbls. at 3,294-3,320 feet. Jordon and others' No. 1- Shamburger was temporarily abandoned at 1,952 feet. Prairie Oil & Gas Co.'s No. 6 Earnest made 10 bbls. after having been shot with 16 and 30 quarts at 3,314-30 feet and drilled to a total depth of 3,598 feet. Price and others' No. 1 Holcomb was dry and abandoned at 1,555 feet. Republic Production Co.'s No. 4 Sneed made 15 bbls. at 1,202-12 feet.

Palo Pinto County

Berry Brothers & McLester Oil Co.'s No. 1 McDonald was dry and abandoned at 2,004 feet.

Shackelford County

James' No. 10 Maberly was shot with 50 sticks of dynamite at 994-1,002 feet and made 10 bbls. Roeser & Pendleton's No. 79-A-60 Cook was dry and abandoned at 1,200 feet. Their No. 13-A-61 Cook made 1 bbl. oil and 500,000 feet of gas at 1,356-75 feet. Their No. 15-A-61 Cook made 100 bbls. at 1,329-50 feet, and their No. 36-C-60 Cook made 75 bbls. at 1,151-94 feet. The Consolidated Oil Co.'s No. 1 Rynard was dry and abandoned at 1,410 feet.

TAX SHOULD BE USED FOR ROADS EXCLUSIVELY

(Continued from Page 122)

than a merchant or dealer in other commodities pays. He pays the same ad valorem taxes that other merchants pay, and in addition he pays an inspection tax of four-tenth of 1 cent per gallon. So far as I am informed the same or similar taxes are exacted of the dealers in the other states. The question occurs, is it fair to place the additional burden of collecting the gasoline tax, without compensation, upon the dealers?

States Should Be Fair

The states should have no disposition other than to be fair to the industry through which the revenue is produced. As it is now, the dealer not only collects the revenue without compensation, but he takes all the credit risks and losses, and bears all the expenses incident thereto. No mercantile business, selling under a credit system, as oil companies must, can hardly escape with a loss, on account of bad debts or credits, of less than one per cent. In addition, the dealer has unavoidable wastes and evaporation. His accounting, too, adds something to the costs. These costs and losses he has to bear, whether the excise tax is assessed or levied on either his sales or his purchases. He does not want to profit from the tax. He should not be permitted to, if he did. But common fairness demands that he should be reimbursed or refunded the amount of his losses and expenses. To allow the dealer to set up claims to recover, or have refunded, to him the items of loss and expenses, would involve both the dealer and the tax department in interminable accounting controversies. Therefore, the fair and direct way to handle the matter, would be to allow the dealer a fixed deduction to cover the items of losses and expenses. This is provided for in the laws of some of the states. South Dakota allows a fixed deduction of 4 per cent from the total gallonage received. Possibly that is high. My own idea is that 2½ or 3 per cent would be about adequate. But it should be allowed, and the provision for it should be made in any model, uniform, or special acts.

The gasoline revenue must, by the act levying it, be required to be devoted by the state to the purposes in which its justification is founded—highways and roads.

The excise tax on gasoline is greater than the combined net profit of the immense capital invested in the gasoline industry. The states are profiting more per gallon than the producer, the refiner, and the marketer, combined. They are preferred stockholders whose dividends are never passed and who have no investment to lose. Then why should they not aid their citizens in getting the full benefit of the taxes they pay by appropriating a small part of the tax to the advertisement of their roads and their resources. The revenue from the increased gallonage of gasoline used would go far toward paying the expense of the advertising.

One-fourth of 1 cent per gallon intelligently expended for advertising would contribute more to the development of the state than many times the amount expended in road building only. But the road building would not be retarded. Without the roads, the advertising would be a waste of money and energy. The right sort of publicity following the construction of roads, will bring the development of the resources of the state, which is so essential to its prosperity.

WEST TEXAS FIELDS

(Continued from Page 40)

the salt at 1,000 feet, topped the lime at 2,510 feet, encountered sulphur water at 2,705 feet and was dry and abandoned at 3,905 feet.

Howard County

Amerada Petroleum Corp.'s No. 1 Stewart, 330 feet from the south and east lines, Section 130, Block 29, W.&N.W.R.R. Survey, topped the lime at 2,245 feet, encountered sulphur water at 3,122 feet, and was dry and abandoned. Owen & Sloan's No. 7 Dora Roberts, 2,310 feet from the south line and 330 feet from the east line, Section 136, Block 29, W.&N.W. Survey, topped the pay at 1,298 feet, was drilled to a total depth of 1,395 feet and had an initial production of 400 bbls. Peer Oil Co.'s No. 1 Reed, 1,320 feet from north and west lines, Section 39, Block 30, was dry and abandoned at 3,450 feet. Pure Oil Co.'s No. 6 Chalk, located 330 feet from the east line and 1,660 feet from the north line, Section 125, Block 29, W.&N.W.R.R. Survey, topped the pay at 1,657 feet, was drilled to a total depth of 1,673 feet, shot with 5 quarts at 1,657-68 feet and had an initial production of 65 bbls.

Gulf Production Co.'s No. 5 Chalk, Section 125, Block 29, W.&N.W. Survey, pumped 30 bbls. at 1,858 feet. Laurell and Cosden's No. 7 Dora Roberts, 2,310 feet north and 380 feet west of SE cor. Section 136, Block 29, W.&N.W. Survey, pumped 400 bbls. at 1,289-1,400 feet. Magnolia Petroleum Co.'s No. 4 Dora Roberts made 3,122 bbls. in 24 hours at 3,002-49 feet, plugged back to 3,044 feet and is now pumping 815 bbls. Magnolia Petroleum Co.'s No. 8 Dora Roberts swabbed 1,485 bbls. at 2,970-3,002 feet.

Jones County

Marland Petroleum Co.'s No. 4 J. C. Mason, 1,005 feet north and 330 feet east of SW cor. of E half of NE, Section 18, Block 19, T.&P.R.R. Survey, swabbed 156 bbls. in 21 hours at 2,513-22 feet.

Irion County

Harry Adams' No. 1 Thompson, 660 feet from north and 1,980 feet from west line of Section 5, Block 10, was dry and abandoned at 1,502 feet.

Loving County

Lockhart & Co.'s No. 1 Hubbard, 330 feet from SE and 2,970 feet from NE of Section 83, Block 33, H.&T.C.R.R. Survey, topped the salt at 708 feet, topped the Delaware at 4,163 feet, topped the pay at 4,165 feet and was drilled to a total depth of 4,207 feet with an initial production of 125 bbls. daily.

Martin County

Phillips Petroleum Co.'s No. 1 Slaughter, 330 feet south and east of Section 77, Bauer & Cockrell Survey, topped the lime at 3,860 feet, encountered a hole full of sulphur water at 4,415-30 feet and was dry and abandoned at 4,450 feet.

Reeves County

Eastland Oil Co.'s No. 1 Campbell, 1,650 feet from west line and 330 feet from south line, Section 43, Block 59, P.S.L., topped the Delaware at 3,040 feet encountered a hole full of sulphur water at 3,282 feet and was dry and abandoned at 3,555 feet. McRobie and others' No. 1 Bell, 1,020 feet NW SE line and 1,500 feet NE SW line, Section 30, Block 2, H.&G.N.R.R. Survey, was dry and abandoned at 654 feet.

Pecos County

California Co.'s No. 17 Yates, located on lease No. 1, made 331 bbls. per hour at 1,025-1,283 feet. Its No. 18 Yates, on the same lease, made 1,236 bbls. in 30 minutes at 1,265-1,388 feet.

Winkler County

Gulf Production Co.'s No. 16 Hendricks-C, 330 feet south and east of NW cor. Section 40, Block B-5, made 36,576 bbls., 7 per cent water at 2,702 feet, and 34,016 bbls. net oil. Independent Oil & Gas Co.'s No. 2 Hendricks-B, 1,650 feet from the east line and 330 feet from the south line, SE cor. Section 44, Block 26, had an initial production of 300 bbls. at 2,883-2,929 feet. Its No. 7-A-2 Hendricks-B made 200 bbls. per hour, 75 per cent water at 2,765 feet. The location was abandoned on Marland Oil Co.'s No. 2 Hendricks, 990 feet south and 2,310 feet west of NE cor. Section 33, Block

26. Pure Oil Co.'s No. 11-A Hendricks, 990 feet south and west of NE cor. Section 41, Block B-5, topped the lime at 2,470 feet, and had an initial production of 193 bbls. hourly, 68 per cent water, at 2,687-2,868 feet. Republic Production Co.'s No. 4-C Hendricks, 330 feet south and 990 feet west of NE cor. Section 42, Block B-5, topped the lime at 2,585 feet, and had an initial production of 400 bbls. daily at 2,792-2,860 feet. Texon Oil & Land Co.'s No. 5-A Hendricks, 2,310 feet from the east line and 990 feet from the south line, Section 41, Block B-5, topped the lime at 2,301 feet, topped the pay at 2,760 feet, was drilled to a total depth of 2,762 feet and had an initial production of 150 bbls. daily, 85 per cent water.

Roxana and The Texas Company's No. 4 Hendricks made 350 bbls. daily, 90 per cent water at 2,585-2,958 feet. Their No. 9-A Hendricks, in Section 29, Block B-5, had an initial production of 186 bbls. per hour at 2,990-3,002 feet. Southern Crude Oil Purchasing Co.'s No. 2 Hendricks T-88-T, 2,310 feet from the south line and 990 feet from the west line, Section 34, Block 26, made 365 bbls. daily at 2,733-2,830 feet.

Upton County

Cordova Union Land Co.'s No. 1 Land Co. was dry and abandoned at 2,210 feet.

WEST TEXAS
Estimated Daily Average Production for the Week Ending September 29

County—	Wells	Bbls.
Crane	268	43,381
Crockett	49	2,793
Ector	2	0
Fisher	4	825
Howard	183	23,111
Jones	40	3,567
Loving	5	243
Mitchell	141	2,479
Pecos	255	68,521
Reagan	227	18,451
Runnels	2	48
Scurry	5	37
Upton	293	14,685
Winkler	363	166,408
Total this week	1,833	344,549
Total last week	1,830	350,511
Difference	3	5,962

FEW CHANGES MADE IN OKLAHOMA MARKET

(Continued from Page 28)

tor and they anticipate still higher prices over the remainder of the year.

To Reduce Runs

There remains a question on what refiners will do over the winter in regard to crude runs but it is the general belief runs will be materially cut and stocks of gasoline will not be allowed to accumulate to the point where they will prove burdensome next year. At the same time, cracking operations are expected to be continued at a rate near their capacity due to the very favorable return from their operations. Gasoline prices could go considerably below their present level and yet a profit made from cracking because of the weak gas oil and fuel market, while a skimming operation at these low prices might not pay.

Gasoline and Naphthas

The presence of North Texas gasoline in the normal Oklahoma market at prices below the general Oklahoma price has threatened the latter market at times but it is apparent the threat was not severe enough to cause the market to crash. Instead, there has been only a very slow decline and the force behind the agitation for lower prices has weakened.

The higher gravity gasolines promise to show greater stability than the regular 58-60 U. S. Motor grade. The weighted average prices on the four more important grades of gasoline sold on Monday by Oklahoma plants to jobber outside the State appear below.

Grade—	Price Oct. 1	Price Sept. 25
58-60 437 endpoint	.09725	.09695
60-62 437 endpoint	.09900	.09958
60-62 400 endpoint	.10125	.10158
64-66 375 endpoint	*.....	.11000

*No sales reported.

There was an increased demand for naphtha but prices remained unchanged.

Natural Gasoline

A narrow price differential was maintained among the various grades of natural gasoline and the market was very stable. There was some C grade material available at 9¼ cents but the amount was small and could not be taken as an indication of the general market.

Kerosene and Distillates

Although kerosene could be purchased in North Texas considerably under the Oklahoma price there was only a slight weakening in the Oklahoma price. The influence of the North Texas market has been apparent for more than a month. The 41-43 grade of kerosene is selling as low as 5⅝ cents in North Texas and with Oklahoma refiners holding at 6 to 6¼ cents, too great a price differential is set up to be maintained over any great period. Distillates sold at prices ranging from 2¾ cents for the low cold test 36-38 gravity gas oil to 3¼ cents for the high gravity low flash furnace oils. There was a much greater demand for the lighter grades even at the higher prices.

Gas Oil and Fuel Oil

There was no change in either the gas oil or the fuel oil market and while some material was moving from the outside into the Oklahoma marketing territory below the 55 cents based on Group 3, this was the low for the Oklahoma market.

Lubricants and Wax

Except for the continuation of a strong cylinder stock market and a favorable demand for bright stocks there was a tendency for the general lubricating oil market to weaken. Wax continues strong but prices remained unchanged.

UNCLE JOE EVANS TO RECEIVE MEDAL

(Continued from Page 29)

are the five which have completed elimination contests to select their teams. The Marland Oil Co. will send a feature team made up of children ranging in age from 7 to 14 years.

Twenty tests to which the competing teams will be subjected are announced by Don Wallace of the exposition safety committee and director of the Safety Section of the Mid-Continent Oil and Gas Association. They include treatment of many kinds of injuries which might be suffered through accident in the oil fields. The first prize is a silver loving cup, awarded by the International Petroleum Exposition and now held by the Empire Refining team of Cushing, Okla. Individual silver medals will be given as second prizes and individual bronze medals as third prizes. Individual gold medals will be awarded also to the members of the winning team.

Presentation of the medals will take place at a banquet to be held on the evening of October 22 in the Mayo Hotel by the Mid-Continent Oil and Gas Association Safety Section, the United States Bureau of Mines, the National Safety Council and the exposition safety committee. Speakers will be Charles B. Scott, Chicago, president of the Bureau of Safety, Inc., and Harry C. Fowler, Washington, D. C., assistant to the chief petroleum engineer in the United States Bureau of Mines.

Four special events are scheduled for October 24, namely, meeting of the Natural Gasoline Manufacturers Association, meeting of the Natural Gasoline Men's Association, Rotary dinner for foreign delegates and the annual dinner of the Mid-Continent Oil and Gas Association. All these will be held in the Mayo Hotel. Harry H. Smith of Tulsa will have charge of the Mid-Continent Oil and Gas Association dinner and he has invited 100 executives in the oil and gas industry to take part in a round table discussion, which is to be substituted for the customary speeches.

Charles M. Schwab, chairman of the board of the Bethlehem Steel Co., will open the exposition officially on the afternoon of October 20.

SHELL P. L. STATEMENT

The Shell Pipe Line Corp.'s statement of runs and shipments for August is as follows: Runs 3,621,896.13 bbls., daily average 116,835 bbls.; shipments 3,461,-361.74 bbls., daily average 111,657 bbls. The company runs oil from fields in Texas, Oklahoma and Kansas.

OSAGE COUNTY AS POOR MAN'S FIELD

(Continued from Page 31)

Gas Co. at prices ranging from $11,000 to $18,000.

In the Burbank Field, where A. G. Oliphant started the development of a structural "thumb" that stuck out from the main part of the field, three leases ran into what may be termed "real money." Tract 107, NW Section 14-26-6, went to A. G. Oliphant and others at $145,000; Tract 108, SW Section 14-26-6, was bought by the Lewis Production Co. for $171,000, and Tract 109, SE Section 15-26-6, was bought by the Lewis Production Co. for $188,000. Other pieces in the same neighborhood brought lower prices.

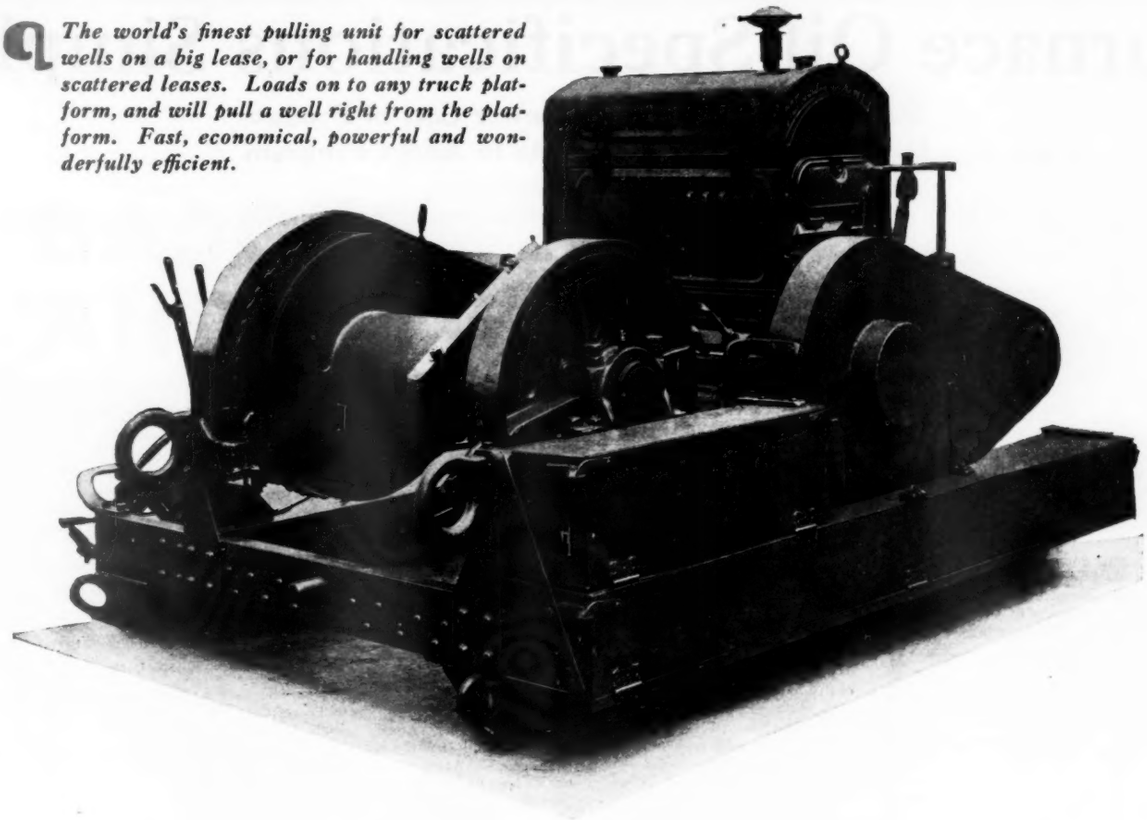
In all 19,992.15 acres were sold for $986,200, or an average of less than $50 per acre, but of the total acreage sold 2,560 acres went for $838,000 or about $327 per acre, while the bulk of it, 17,-432.15 acres, were purchased at an average of $2.77 per acre. If that is not a low figure for leases within a great oil region, where can you beat it?

Following are the official figures of the sale:

Tr. No.	Description	Acrs.	Bonus	Purchaser
1	NW 19-22-12	160	$ 100	Ray Branstetter, Skiatook.
2	SW 19-22-12	160	100	Penniowa Oil & Gas Co., Skiatook.
3	SE 21-22-12	160	100	W. S. McCray, Tulsa.
4	NW 27-22-12	160	100	W. S. McCray, Tulsa.
5	SW 27-22-12	160	100	W. S. McCray, Tulsa.
6	NW 16-23-12	160	100	Silurian Oil Co., Tulsa.
7	NE 20-23-12	160	200	Silurian Oil Co., Tulsa.
8	NW 12-23-12	160	100	Silurian Oil Co., Tulsa.
9	SE 18-25-12	160	2,100	Tidal Oil Co., Tulsa.
10	NW 27-21-11	160	1,500	Prod. & Refrs. Corp. and Peters Petroleum Corp.
11	SW 27-21-11	160	2,600	W. C. Elliott and H. C. Smith, Tulsa.
12	SE 28-21-11	160	1,600	Prod. & Refrs. Corp. and Peters Petroleum Corp.
13	NE 31-21-11	160	2,500	Devonian Oil Co., Tulsa.
14	SE 31-21-11	160	4,100	Prod. & Refrs. Corp. and Peters Petroleum Corp.
15	NE 33-21-11	160	1,200	Prairie Oil & Gas Co., Independence.
16	NE 14-22-11	160	425	Ray Branstetter, Skiatook.
17	NE 25-22-11	160	150	Penniwa Oil & Gas Co., Skiatook.
18	SE 1-23-11	160	200	Silurian Oil Co., Tulsa.
19	SW 1-23-11	160	300	Silurian Oil Co., Tulsa.
20	NE 12-23-11	160	175	Silurian Oil Co., Tulsa.
21	E½ SW 12-23-11	80	1,000	Silurian Oil Co., Tulsa.
22	SW 22-27-11	160	700	Prod. & Refrs. Corp. and Peters Petroleum Corp.
23	NW 26-27-11	160	2,100	The Texas Company, Tulsa.
24	NE 27-27-11	160	3,000	Peters Pet. Corp. and Prod. & Refrs. Corp.
25	SE 4-20-10	160	225	Peters Pet. Corp. and Prod. & Refrs. Corp.
26	NE 9-20-10	160	300	Fred M. Boso, Tulsa.
27	NE 3-21-10	160	900	Devonian Oil Co., Tulsa.
28	SE 3-21-10	160	1,100	Devonian Oil Co., Tulsa.
29	SE 26-21-10	160	100	J. E. Cooper, Tulsa.
30	NW 28-21-10	160	200	Samuel E. Wolff, Sand Springs.
31	NE 29-21-10	160	175	Samuel E. Wolff, Sand Springs.
32	SE 29-21-10	160	200	Samuel E. Wolff, Sand Springs.
33	SW 11-23-10	160	600	Ray Branstetter, Skiatook.
34	NE 11-26-10	160	3,400	Transcontinental Oil Co., Tulsa.
35	SE 11-26-10	160	1,700	Transcontinental Oil Co., Tulsa.
36	NW 12-26-10	160	2,000	Prod. & Refrs. Corp. and Peters Petroleum Corp.
37	SW 12-26-10	160	1,500	Transcontinental Oil Co., Tulsa.
38	SW 16-27-10	160	1,700	Prod. & Refrs. Corp. and Peters Petroleum Corp.
39	SE 17-27-10	160	225	Dora Rogers, Long Beach.
40	SE 9-21-9	160	3,500	H. H. Mundy and A. G. Oliphant, Tulsa.
41	NW 35-23-9	160	1,100	A. G. Oliphant, Tulsa.
42	NE 1-26-9	160	225	Frank J. Carroll, Chicago.
43	SE 18-26-9	160	100	Wrightsman Pet. Corp., Tulsa.
44	NE 19-26-9	160	500	Wrightsman Pet. Corp., Tulsa.
45	NW 20-26-9	160	400	Wrightsman Pet. Corp., Tulsa.
46	SW 25-27-9	160	150	Peters Pet. Corp. and Prod. & Refrs. Corp.
47	SE 36-27-9	160	350	Frank J. Carroll, Chicago.
48	SE 1-21-8	160	150	H. M. Hanner and R. H. Sherman, Okla. City.
49	NE 3-21-8	160	1,700	A. G. Oliphant, Tulsa.
50	NW 3-21-8	160	700	A. G. Oliphant, Tulsa.
51	SE 3-21-8	160	1,000	A. G. Oliphant, Tulsa.
52	SW 3-21-8	160	1,700	A. G. Oliphant, Tulsa.
53	NE 10-21-8	160	200	A. G. Oliphant, H. H. Mundy, L. G. Stanley and George W. Reynolds.
54	Fr. NW 10-21-8	117.40	900	A. G. Oliphant, Tulsa.
55	NE 7-22-8	160	800	Prairie Oil & Gas Co., Independence.
56	SE 7-22-8	160	3,100	Gypsy Oil Co., Tulsa.
57	NW 8-22-8	160	3,100	Peters Pet. Corp. and Prod. & Refrs. Corp.
58	NW 32-22-8	160	1,100	White Eagle O. & R. Co., Tulsa.
59	Fr. SW 32-22-8	114.75	200	Wrightsman Pet. Corp., Tulsa.
60	SE 18-23-8	160	100	A. G. Oliphant, Tulsa.
61	SW 18-23-8	160	2,100	A. G. Oliphant, Tulsa.
62	NE 8-24-8	160	4,100	A. G. Oliphant, Tulsa.
63	SE 8-24-8	160	1,100	Gypsy Oil Co., Tulsa.
64	SW 8-24-8	160	1,200	Phillips Petroleum Co., Bartlesville.
65	SE 15-24-8	160	1,100	Frank J. Carroll, Chicago.
66	SW 18-24-8	160	2,200	Gypsy Oil Co., Tulsa.
67	NW 19-24-8	160	16,500	Prod. & Refrs. Corp. and Peters Petroleum Corp.
68	NE 22-24-8	160	1,100	Prairie Oil & Gas Co., Independence.
69	NW 28-24-8	160	1,800	Phillips Petroleum Co., Bartlesville.
70	SW 31-26-8	160	1,900	Prairie Oil & Gas Co., Independence.
71	SW. 2-26-8	160	250	Nath Jones, Pawhuska.
72	SE 3-26-8	160	450	A. G. Oliphant, Tulsa.
73	NW 5-26-8	160	1,000	Wrightsman Pet. Co., Tulsa.
74	NE 6-26-8	160	600	Wrightsman Pet. Co., Tulsa.
75	SE 6-26-8	160	700	Wrightsman Pet. Co., Tulsa.
76	NW 12-26-8	160	900	A. G. Oliphant, Tulsa.
77	NE 15-26-8	160	1,400	L. R. Stith and others, Fairfax, Okla.
78	SE 25-27-8	160	5,900	Prairie Oil & Gas Co.
79	NE 36-27-8	160	5,100	A. G. Oliphant, Tulsa.
80	NW 12-23-7	160	61,000	The Texas Company, Tulsa.
81	NE 14-23-7	160	7,200	Marland Production Co. and others, Ponca City.
82	NW 14-23-7	160	2,000	Plains Petroleum Co., Tulsa.
83	SW 27-23-7	160	1,200	Plains Petroleum Co., Tulsa.
84	SE 28-23-7	160	2,200	Gypsy Oil Co., Tulsa.
85	NE 33-23-7	160	1,600	Prod. & Refrs. Corp. and Peters Petroleum Corp.
86	NE 13-24-7	160	2,500	Gypsy Oil Co., Tulsa.
87	SE 13-24-7	160	4,100	Prairie Oil & Gas Co., Independence.
88	NE 21-24-7	160	20,500	Marland Production Co. and others.
89	SW 23-24-7	160	10,900	Marland Production Co.
90	NE 25-24-7	160	20,000	Prairie O. & G. Co. and Peters Pet. Corp.
91	NE 13-25-7	160	4,500	Prairie Oil & Gas Co.
92	NW 13-25-7	160	4,000	The Texas Company.
93	NE 12-26-7	160	600	White Eagle O. & R. Co., Tulsa.
94	NW 12-26-7	160	500	Wrightsman Pet. Co., Tulsa.
95	SE 20-26-7	160	100	Jess Moore and A. M. Barbour, Kaw City, Okla.
96	SW 20-26-7	160	800	Peters Pet. Corp. and Prod. & Refrs. Corp.
97	NE 23-26-7	160	200	White Eagle Oil & Refg Co., Tulsa.
98	NE 8-28-7	160	150	Champlin Refg. Co., Enid.
99	SE 8-28-7	160	450	Mid-Co Oil Corp., Tulsa.
100	NW 9-28-7	160	500	Peters Pet. Corp. and Prod. & Refrs. Corp.
101	SW 9-28-7	160	450	Champlin Refg. Co., Enid.
102	NW 3-25-6	160	13,000	Gypsy Oil Co., Tulsa.
103	NE 4-25-6	160	14,000	Phillips Pet. Co., Bartlesville.
104	NE 33-25-6	160	18,000	Phillips Pet. Co., Bartlesville.
105	NW 33-25-6	160	11,000	Prairie Oil & Gas Co., Independence.
106	SE 33-25-6	160	50,000	Prairie Oil & Gas Co., Independence.
107	NW 14-26-6	160	145,000	A. G. Oliphant and others, Tulsa.
108	SW 14-26-6	160	171,000	Lewis Production Co., Tulsa.
109	SE 15-26-6	160	188,000	Lewis Production Co., Tulsa.
110	NE 27-26-6	160	36,000	A. G. Oliphant and Empire O. & R. Co.
111	SE 33-26-6	160	26,000	Carter Oil Co., Tulsa.
112	SW 34-26-6	160	38,000	Carter Oil Co., Tulsa.
113	NW 29-29-6	160	550	Prairie Oil & Gas Co.
114	NW 29-29-6	160	200	Prod. & Refrs. Corp. and Peters Petroleum Corp.
115	SE 13-24-5	160	600	Champlin Refining Co., Enid.
116	SW 13-24-5	160	1,100	Phillips Petroleum Co., Bartlesville.
117	NE 11-26-5	160	150	H. M. Hanner and R. H. Sherman, Okla. City.
118	NW 11-26-5	160	100	P. D. Saklatvala, New York.
119	SE 11-26-5	160	100	W. M. Cannon, New York.
120	SW 11-26-5	160	100	H. M. Hanner and R. H. Sherman, Okla. City.
121	SE 12-26-5	160	1,000	Champlin Refg. Co., Enid.
122	SW 12-26-5	160	500	Dora Rogers, Long Beach, Calif.
123	NE 20-25-3	160	3,500	Phillips Petroleum Co., Bartlesville.
124	NW 20-25-3	160	4,200	Gypsy Oil Co., Tulsa.
125	SE 20-25-3	160	5,100	The Texas Company, Tulsa.
126	SW 20-25-3	160	4,800	Transcontinental Oil Co., Tulsa.

Total bonus $986,200

The world's finest pulling unit for scattered wells on a big lease, or for handling wells on scattered leases. Loads on to any truck platform, and will pull a well right from the platform. Fast, economical, powerful and wonderfully efficient.



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Furnace Oil Specifications Simple

Standardization Tends to Lower Cost of Production. Some Refiners Hesitate to Adopt Program

By W. T. Ziegenhain

With a greatly increased consumption of furnace oils expected the coming winter, Oklahoma refiners are modifying their operations to increase its yield but there still remains a decided indefiniteness regarding just what specifications should be met. The American Oil Burner Association has adopted certain specifications on the oils which they contend will most economically and satisfactorily meet the requirements of the many different kinds of burners now in use but the specifications used by refiners do not indicate that a great number are adopting this scheme of standardization. It will probably take some time before a full program of standardization of furnace oil specifications may be adopted as many refiners feel that while the program is a good one, it does not fit in with their manufacturing or sales policy and no doubt it will be several years at least before all of the arguments in these individual cases will be satisfactorily answered.

Specifications Complete

The specifications as adopted by the American Oil Burner Association and approved by the Fire Underwriters Laboratories, do not contain any requirements that cannot be readily met from the manufacturing standpoint, yet they are complete enough to cover the essential points with respect to the satisfactory performance of the burner. The reason why the refinery sales departments have not wholeheartedly adopted the program of standardization is probably because they feel they will have to sacrifice a portion of the business already developed or will have to sell at a more competitive price.

Some refiners have aimed to produce a fuel that will work in certain classes of burners and have specialized in their sales efforts as well. In some cases, relatively few jobbers handle the entire output of a refinery and in turn, these jobbers have a list of regular customers who have found the fuel satisfactory. This is particularly true in cases where the oil burner manufacturer services the burner and supplies the oil to be used. For a refiner to modify the quality of his fuel, either to improve it or to allow a more liberal specification to be adopted, would throw the gates open to the jobber and it will take additional sales effort to hold them. This objection also appears from the standpoint of price, in as much as if all refiners made the same quality and the same grades of furnace oils, jobbers will secure quotations from a greater number and the business would be made more competitive. In some cases, the sales departments feel as though the trade name for their fuel may lose its identity. This also is an important factor to consider from a sales angle but these points are contingent upon the local situation and like the case of gasoline, there seems to be little argument but that a program of standardization would prove beneficial to refiners as a group. The increased volume of sales and the lower production costs would more than equalize the temporary loss on the part of a few. It is true that standardization favors the manufacturing end of the refinery, just as the standardization of specifications for gasoline has worked toward lowering production costs.

The specifications as outlined, may be used by refiners running any kind of crude and serve equally well in all refining and marketing centers. This was made possible by eliminating the gravity specification. While it is admitted that "gravity means nothing" this specification is used as the principal means of designating quality. A 38 gravity furnace oil is considered a better furnace oil than one having a gravity of 37, and it is difficult for the refiner to convince the jobber otherwise, even if he chooses to. The low cold test and low flash and fire specifications on the various grades materially favors their production as cracked products. This is advantageous to the refiner since he can more cheaply manufacture them as cracked products.

Since the first thought of the consumer when approached on the subject of oil heating is to ask for a comparison of costs for burning oil and some other fuel, a difference of a quarter of a cent per gallon from the costs of the oil may determine whether or not the installation will be made. Just as cracking has cheapened the cost of manufacturing refinery gasoline, it is gradually assuming that role in supplying the various grades of furnace oil. At one time furnace oil was evaluated at a price midway between kerosene and gas-oil, since furnace oil is made up of alternate products, 50 per cent of which would go to the kerosene cut and the other 50 per cent to gas-oil. With kerosene at 6½ cents and gas-oil at 2½ cents, as at present, the ordinary 165 flash light furnace oil would assume a price of 4½ cents. Such a furnace oil is now selling at 3¼ cents. Cracking has made this possible in as much as certain of the recycled distillates may be replaced with raw gas-oil or distillates to give a higher yield from the cracking operation. This cracked distillate thus takes a value no higher than the costs of replacing it. It does not pay, in most cases, to redistill and treat these cracked distillates to make kerosene, so that the value of kerosene does not influence the setting of the price for the distillate. It is also true that more and more of this class of product is being produced and as new cracking units are installed this supply will be further added to. It is probable that Mid-Continent refiners could easily supply double the volume of furnace oil now being moved from their plants as an average over the year.

FURNACE OIL SPECIFICATIONS AS ADOPTED BY THE AMERICAN OIL BURNER ASSOCIATION

Grade—	Flash Pensky-Martens closed cup °F.	Maximum pour-point °F.	Maximum B.S.&W.	Distillation range	Maximum viscosity
No. 1 light furnace oil	110-165	0	Trace	At least 10% over at 420°F. Maximum endpoint 600°F.	
No. 2 medium furnace oil	125-190	0	Trace	At least 10% over at 440°F. At least 90% over at 620°F.	
No. 3 heavy furnace oil	150-200	*0	.1%	At least 10% over at 460°F. At least 90% over at 675°F.	55 at 100°F. Saybolt Universal
No. 4 light fuel oil	150-250	15	1.0		125 at 100°F. Saybolt Universal
No. 5 medium fuel oil	150 (Min.)	..	1.0		100 at 122°F. Saybolt Furol
No. 6 heavy fuel oil	150 (Min.)	..	†2.0		300 at 122°F. Saybolt Furol

*Except in localities having average temperature of 40 degrees Fahrenheit or above during period from October 1 to May 1, in which case 15 degrees Fahrenheit maximum is specified.

†Maximum sediment .25 per cent, a deduction in quantity is made for all water plus sediment in excess of 1 per cent.

The test methods used as a basis for these specifications are as follows:

1. Flashpoint:
Minimum—The instrument and method for determining minimum flashpoint shall be that legal for the locality in which the oil is sold. In absence of legal requirements the minimum flashpoint shall be determined in accordance with the standard method of test for flashpoint by means of the Pensky-Martens closed tester. (Serial designation D-93).
Maximum—Standard method of test for flashpoint by means of the Pensky-Martens closed tester. (Serial designation D-93).
2. Water and Sediment:
Standard method of test for water and sediment in petroleum products by means of centrifuge. (Serial designation D-96).
3. Pourpoint:
Tentative method of test for pourpoints of petroleum products. (Serial designation D-97—27-T).
4. Distillation Test:
Standard method of test for distillation of gasoline, naphtha, kerosene and similar petroleum products. (Serial designation D-86).
5. Viscosity:
Standard method of test for viscosity of petroleum products and lubricants. (Serial designation D-88).

Tube Ends Are Welded to Header

Decreases Cost of Construction and Eliminates Oil Losses in Operation. May Be Used on Any Pipe Still Installation

By G. V. Swearingen*

In Figure 1 of the accompanying drawing and photograph is shown a plan view of a high-pressure cracking coil of similar arrangement to those universally used in the petroleum industry for the cracking of oils. A cracking unit, sometimes referred to as a tube still, consists of 16 coils such as is shown in Figure 1, the coils being arranged directly over each other with the tubes in staggered relation. The coils are connected so as to provide a continuous channel from the top coil to the bottom coil. The oil is introduced into one of the headers in the top coil and flows back and forth through the tubes, finally passing out of the coil through the outlet and down to the next coil below where a similar flow occurs, this process being repeated in each coil until finally the oil passes out of the outlet of the lower coil.

It will be understood that the tubes connecting the headers of each coil extend through a furnace, with the headers on the outside thereof, which is fired to maintain the required temperature of the oil. The coil shown, is similar in arrangement to those generally used for this purpose, but the construction of the coil is radically different and will now be explained.

A three-hole header, which was made of 6⅝-inch outside diameter by 5¾-inch inside diameter seamless steel tubing, has

(Continued on Page 150)

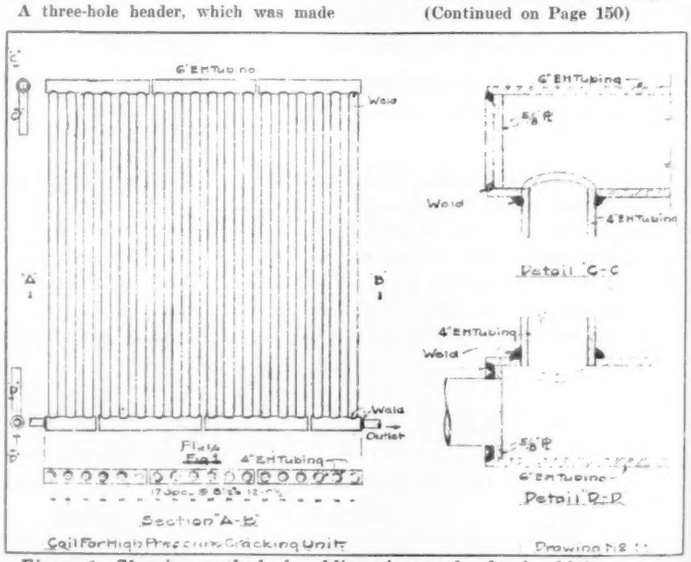
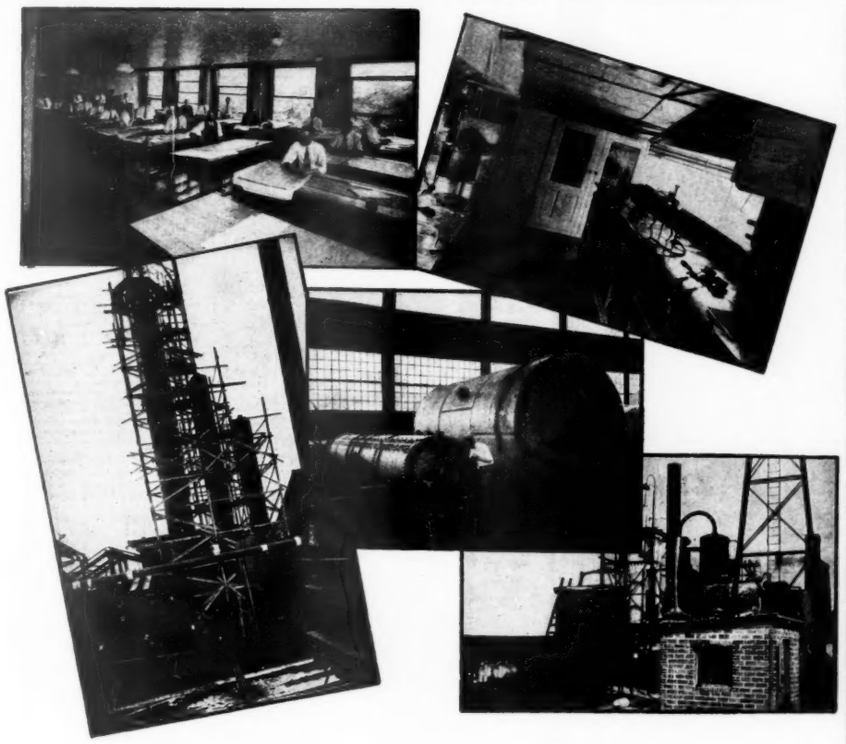


Figure 1—Showing method of welding pipes to header for high pressure condensing.

*This is the fifteenth and last of a series of articles by Mr. Swearingen on the application of welding at refineries. The articles were prepared in connection with the Lincoln arc welding prize sponsored by the Lincoln Electric Co. Fourteenth article appeared September 27.

BADGER FACILITIES AND ORGANIZATION



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Pierce Petroleum Corp.
Tide Water Oil Co.
Anglo-Persian Oil Co., Ltd.
Empire Refineries, Inc.
Marland Oil Co.
Vacuum Oil Co.
Associated Oil Co.
Barnsdall Corp.
Humble Oil & Refining Co.
Tidal Refining Co.
Standard Oil Co. of N. J.
General Petroleum Corp.
Beacon Oil Company
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Manufacturing facilities Engineering organization
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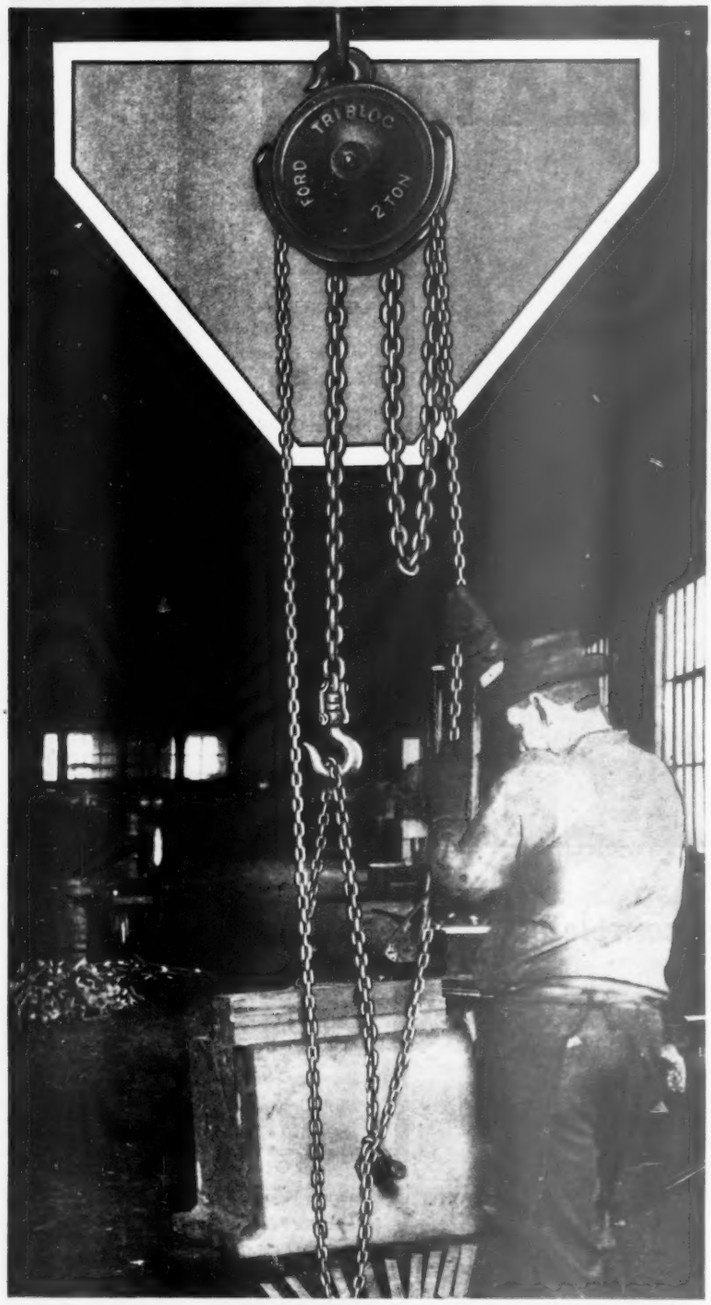

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CALIFORNIA OIL FIELD OPERATIONS FOR AUGUST, 1928

According to figures collected by the American Petroleum Institute, Pacific Coast office, the total production of crude oil in California for August amounted to 19,444,899 bbls., an average of 627,255 bbls. per day. This is a decrease of 9,986 bbls. per day under July production.

Total stocks of crude and all products in Pacific Coast territory decreased during the month 957,459 bbls. The total stocks at the end of the month were 138,795,848 bbls. The total stock decrease for 1928, up to August 31, was 544,502 bbls. Comparative figures as of August 31, 1928, July 31, 1928 and August 31, 1927, are shown in detail on the second page of this report.

Fifty-seven wells were completed during the month with an initial daily production of 30,058 bbls., compared with 57 wells completed during July with an initial production of 65,278 bbls.

PRODUCTION

(Figures of production and stocks are in barrels of 42 gallons)

District—	Bbls. per month	Daily average Aug., 1928	July, 1928	Aug., 1927
Kern River	187,877	6,061	6,132	16,994
Mount Poso	8,494	274	389	38
Fruitvale	9,126	294	343	.....
Round Mountain	3,842	124	50	.....
McKittrick	159,132	5,133	4,834	5,062
Midway-Sunset	2,287,235	73,782	71,868	84,997
Elk Hills	669,405	21,594	21,622	24,914
Lost Hills-Belridge	126,060	4,066	4,290	3,928
Coalinga	329,357	10,624	10,535	10,229
Wheeler Ridge	27,422	885	918	1,026
Watsonville	1,937	62	64	59
Santa Maria	153,598	4,956	5,228	5,853
Summerland	3,758	121	121	136
Elwood-Goleta	71,631	2,311	410	337
Rincon	110,658	3,570	3,587	.....
Ventura Avenue	1,674,597	50,793	53,645	45,845
Ventura-Newhall	176,920	5,707	5,774	5,949
Los Angeles-Salt Lake	46,514	1,500	1,557	1,753
Whittier	49,496	1,597	1,648	1,646
Fullerton (Brea Olinda)	453,628	14,633	14,740	18,352
Coyote	418,783	13,509	13,438	13,224
Santa Fe Springs	1,226,683	39,570	36,672	39,778
Montebello	369,656	11,924	11,862	14,118
Richfield	554,424	17,885	18,488	22,168
Huntington Beach	1,604,631	51,762	52,906	68,548
Long Beach	5,918,210	190,910	196,075	90,992
Torrance	635,311	17,268	18,083	22,045
Dominguez	342,052	11,034	11,590	15,180
Rosecrans	180,771	5,831	6,118	8,503
Inglewood	930,635	30,021	29,965	33,606
Newport	2,678	86	83	20
Seal Beach	898,262	28,976	33,772	57,607
Potrero	12,116	391	430	.....
Total	19,444,899	627,255	637,241	621,907
July	19,754,458	637,241	.....	.....
Decrease	309,559	9,986	.....	.....

STOCKS

	Aug. 31 1928	July 31, 1928	Aug. stock decrease	Aug. 31, 1927
Heavy crude, heavier than 20 degrees A.P.I. including all grades of fuel	95,810,506	96,418,224	607,718	94,589,976
Refinable crude, 20 degrees A.P.I. and lighter	19,412,315	19,041,594	*370,721	23,931,170
Gasoline	11,290,675	12,908,549	1,617,874	12,423,877
Naphtha distillates	1,695,547	1,429,410	*266,137	3,104,755
All other stocks	10,586,805	9,955,530	*631,275	9,444,877
Total all stocks	138,795,848	139,753,307	957,459	143,494,655

*Increase.

DEVELOPMENT

	New rigs up	Active drill'g	Comp.	Daily initial output	Active prod'g	Abd wells Drlrs.	Abd wells Prdrs.
Kern River	1	3	1	30	1,168	...	...
Mount Poso	3	7	4	750	6	1	...
Fruitvale	4	5	...	.....	2	...	...
Round Mountain	1	2	1	25	2	1	...
McKittrick	1	...	...	.....	289	...	...
Midway-Sunset	4	11	5	550	2,542	...	2
Elk Hills	...	1	...	.....	220	...	...
Lost Hills-Belridge	...	3	2	88	303	...	...
Coalinga	...	1	2	9	797	...	1
Wheeler Ridge	...	1	...	.....	33	...	...
Watsonville	...	...	...	.....	7	...	...
Santa Maria	...	7	1	350	221	...	1
Summerland	...	1	...	.....	89	...	...
Elwood-Goleta	1	1	...	.....	4	...	...
Rincon	...	11	1	1,125	18	...	...
Ventura Avenue	2	28	4	5,100	124	1	...
Ventura-Newhall	6	28	...	.....	513	...	...
Los Angeles-Salt Lake	...	...	...	.....	323	...	...
Whittier	...	...	...	.....	173	...	...
Fullerton	2	5	2	1,700	373	...	...
Coyote	...	1	...	.....	209	...	1
Santa Fe Springs	73	36	1	255	294	...	6
Montebello	2	2	...	.....	168	...	...
Richfield	3	8	3	495	269	...	...
Huntington Beach	5	9	5	1,715	567	2	5
Long Beach	33	160	22	16,960	785	5	1
Torrance	...	...	...	.....	625	...	2
Dominguez	...	...	3	906	73	...	...
Rosecrans	1	2	...	.....	104	...	...
Inglewood	1	2	...	.....	222	...	...
Newport	...	2	...	.....	3	...	...
Seal Beach	...	5	...	.....	136	...	1
Potrero	...	3	...	.....	1	...	...
Miscellaneous drilling	6	123	...	.....	.....	7	1
August	149	468	57	30,058	10,663	17	21
July	76	446	57	65,278	10,643	16	12
Increase	73	22	...	*35,220	20	1	9
Average for year 1927	97	404	75	39,992	11,276	23	21
Average for year 1926	95	422	76	32,635	11,288	24	17
Average for year 1925	105	417	79	42,247	11,393	28	17
Average for year 1924	103	570	103	42,412	10,903	28	21
Average for year 1923	111	759	82	114,690	8,928	24	...

*Decrease.

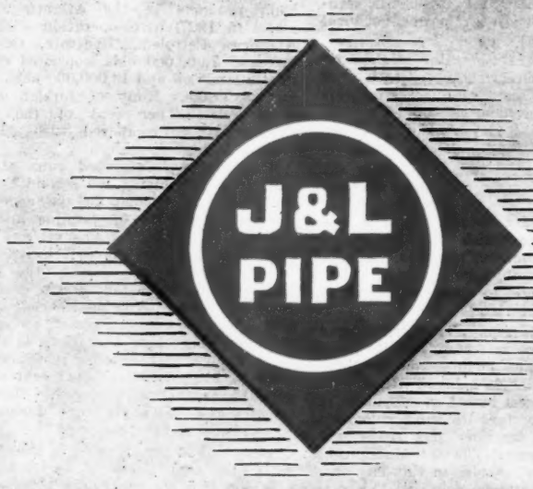
POLAND DENIES OIL MONOPOLY

NEW YORK, Oct. 1. — The Polish ministry of industry and commerce has officially denied reports that the government will set up a monopoly for the sale of oil and oil products and for the nationalization of pipe lines, according to a cablegram received by the American Polish Chamber of Commerce here. Such reports were deemed intended to prevent investments in the oil industry in Poland.

PETTY PETROLEUM CO.

HOUSTON, Tex., Sept. 29.—Van A. Petty, Jr., Gulf Coast operator for the past 15 years, has organized the Petty Petroleum Co. with headquarters in San Antonio, but offices are to be opened at Houston. Mr. Petty has been doing geophysical work throughout the coastal territory through the Petty Geophysical Engineering Corp., headed by his brothers, Olive S. Petty and Dabney E. Petty.

Growing Demand for J & L Seamless



DEMAND for J & L Seamless Steel Casing has been steadily increasing since the day it was first put on the market and oil men using it began to spread the word---*"There's no better seamless made than J & L".*

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J&L STEEL

JONES & LAUGHLIN STEEL CORPORATION

Jones & Laughlin Building - - - Pittsburgh, Pennsylvania

Of Interest to Sales Departments

THREE GAS SERVICE OFFERED IN NEW YORK

By Special Correspondent

NEW YORK, Oct. 1.—Sinclair Consolidated Oil Corp. has adopted a gasoline marketing policy, somewhat revolutionary in character, which has aroused considerable interest among executives of other leading oil companies. The new policy, known as the "Sinclair Three-Gas Service," has come to New York after several months operation in Chicago, where it is reported to have worked out very successfully.

Leading refiners in this area, as well as other parts of the country, have long realized public demand for two grades of gasoline—one, the ordinary type of standard motor gasoline, and the other something out of the ordinary. Public demand for the special fuel has been created by the changes in motor car engineering, which require in many instances a high compression, antiknock gasoline. This demand has been met by the widespread distribution of ethyl gasoline, and more particularly in this section of the country by Standard of New Jersey's "Esso" gasoline, Sinclair's "H.C." motor fuel, Tide Water's Ethyl blend, Sun Oil Co.'s "Sunoco" antiknock gasoline, Beacon Oil Co.'s "7 to 1" motor fuel, Atlantic Refining's ethyl blend, Standard of New York's "Socony Special," Gulf Refining's "Nonox," and in New York City, Municipal's "Super-X" motor fuel. In addition, local markets in other sections of the East Coast territory all have their own local brands of high compression, antiknock motor gasoline. In practically all cases, these motor fuels are sold at retail at a premium of 3 cents a gallon over the service station quotation on regular motor gasoline.

Some of the large companies have been slow at arriving at the point where they felt it good policy to market two grades of gasoline. Others have recognized in this policy another step in the evolution of the oil business, and thus are a couple of steps ahead of their competitors in their volume and distribution on these special blends.

Sinclair in announcing its new "Three-Gas" service has adopted the slogans "A gas for every motoring need," and, "They're all gasoline—nothing added."

The adoption of the new marketing plan introduces as a new member of the Sinclair family "Sinclair Aircraft" motor gasoline, which the company described as "The Ace of High Test Gasolines—for speedy takeoff—flashy acceleration—brilliant performance." The other two members of the Sinclair gasoline group are Sinclair "H.C.," designed for use in motors operating at higher compressions, stop knocks, and give "Better low gear performance," and Sinclair Gasoline, sold under the slogan, "Economy and mileage—full of eager power."

"In these days of changing engines and changing motoring conditions," the company points out, "no one kind of gasoline can meet every motoring need or satisfy every motorist's demands. Alert motorists are demanding gasoline giving superior engine performance—and Sinclair Three-Gas service does it. No longer do you have to buy the gasoline that's just right for somebody else's car—use the one that's best for yours. It's the new, sensible way to get superior engine performance. Here are three gasolines made to keep pace with engine improvement and give superior engine performance.

"Here, instead of one gasoline for all cars, is the new Sinclair 'Three-Gas Service,' which offers you three selective gasolines, each one different—each one sold on its merits—each one just right for a certain requirement in today's motoring.

"Sinclair Aircraft gasoline, for example, gives quick starting, rocket-like getaway, and all-around brilliant performance, especially in traffic where fast acceleration is desirable.

"And there is Sinclair H-C gasoline. Gives high compression performance in any make of engine, better low gear performance, and stops knocks.

"Or, if you prefer a gasoline priced 3 cents less a gallon, select Sinclair regular gasoline, full of eager power, yet ideal for mileage and economy."

The new Aircraft gasoline of the Sinclair company meets the specifications of the army, navy and Bureau of Mines for aviation gasoline, domestic grade.

Sales executives of the Sinclair organization have been keeping close watch on the development of new type motor car engines in this country, and have had their research staffs at work constantly seeking a product to add to their two lines of gasoline which they felt would round out the company's grades, and give the consuming public its choice of a full range of gasolines, to meet the individual needs of the motorist.

The Sinclair company is the first large company to take this step, and its progress in developing business on its three grades of gasoline is being watched with the closest interest by other companies in the field. Thus far, its sales campaign in New York territory has really not gotten under way. The introduction of the "Three Gas" service in this city was made only a fortnight ago, and the company's service department is now busily engaged in making the necessary pump and storage installations at the service and filling stations distributing Sinclair products.

In the Chicago market, the company is introducing its "Three Gas" idea through the medium of an intensive newspaper advertising campaign. In the New York market it is expected that the company, in conformity with its usual policy, will concentrate on billboard advertising display to put over the new service.

GASOLINE—ONE CENT

NEW YORK, Sept. 30.—Standard Oil Co. of New Jersey is putting out miniature "Esso" pumps, faithful reproductions of the large standard pumps, in every detail, for supplying lighter fuel in cigar stores. The pump, designed to be set upon a display case, has a coin slot. Upon deposit of 1 cent, and working of the pump lever, the hose delivers as much lighter fuel as needed. The fuel is visible in the small tank atop the pump, exactly as is the case with the regular filling station "Esso" pumps. While the miniature pumps are more or less an advertising feature, and a distinct novelty, it is believed that the popularity of pocket lighters will make for a heavy demand for the new "Esso" pumps. A small flag on the side of the pump, similar to those used on the big filling station apparatus, reads "Gasoline—1 Cent."

BUS FUEL CONSUMPTION

NEW YORK, Oct. 1.—Transcontinental bus service will soon be placed on a regular schedule by the Yelloway Bus Co. according to an announcement of the company on the completion of a trial trip from San Francisco to New York recently. Twenty-five passengers will be given ample accommodations in the massive buses, two buses leaving each terminus of the route daily. Bus travel is no doubt to bring about a very rapid increase in the consumption of gasoline as the "feeder" lines of buses are developed for these coast to coast routes.

SEABOARD REFINERIES INCREASED OUTPUT

WASHINGTON, D. C., Oct. 1.—The amount of crude petroleum refined at plants on the Atlantic Seaboard was increased during 1927 by approximately 20,000,000 bbls., or 15 per cent, over 1926, according to the United States Bureau of Mines, Department of Commerce, which has completed a study of the sources and distribution of major petroleum products in the Atlantic Coast states in 1927, in co-operation with the American Petroleum Institute. Of this increase, 7,000,000 bbls. consisted of domestic crude oil and 13,000,000 bbls. were foreign crude. Runs of foreign crude comprised 28 per cent of the total throughput, as compared with 22 per cent in 1926.

The effect of increased runs of foreign crude oil during the second half of the year was evident in the decreased relative production of gasoline and the increase production of gas oil and fuel oil. That this decrease in relative gasoline production was due to the lower gasoline content of the foreign crude as compared with the domestic crude available and was not occasioned by a curtailment of cracking operations is shown by the fact that gasoline produced by cracking comprised 35.11 per cent of the gasoline production during the first six months and 35.47 per cent during the second half of the year.

The demand for gasoline in the Atlantic Coast area increased by 10,152,000 bbls., or 11.5 per cent, over 1926, and a slight increase was noted in the demand for kerosene. Deliveries of gas oil and fuel oil, however, decreased from 110,157,000 bbls. in 1926 to 107,790,000 bbls. in 1927. This decrease of 2,367,000 bbls., or 2.15 per cent, in deliveries of gas oil and fuel oil resulted from a decreased demand in the South Atlantic states.

Receipts of crude oil by tankers from Gulf Coast ports continued to increase, reaching a total of 85,212,000 bbls., as compared with 78,992,000 bbls. in 1926, and 72,556,000 bbls. in 1925. Pipe line receipts from the Mid-Continent Field increased from 7,458,000 bbls. in 1926 to 13,605,000 bbls. in 1927, due principally to a larger movement of Seminole crude. Tanker receipts from California were slightly smaller than in 1926, being 10,651,000 bbls. in 1927 as compared with 11,995,000 bbls. in the preceding year. Foreign crude runs at Atlantic Coast refineries increased from 29,329,000 bbls. in 1926 to 42,301,000 bbls. in 1927, an increase of 12,972,000 bbls., or 44 per cent.

The rated daily capacity of refineries along the Atlantic Seaboard has increased during the past two years by nearly 100,000 bbls. The major portion of this increase in capacity was constructed for the refining of foreign crude.

Production of gasoline by Atlantic Coast refineries advanced from 46,142,000 bbls. in 1926 to 49,247,000 bbls. in 1927, an increase of 3,105,000 bbls., or 6.73 per cent. This percentage increase in refinery production of gasoline corresponded with an average increase of 11.5 per cent in gasoline consumption in the Atlantic Coast area.

The average recovery of gasoline per barrel of crude oil refined in 1927 was 32.7 per cent, or 13.7 gallons, as compared with 35.3 per cent, or 14.8 gallons, in 1926.

Gasoline production at Atlantic Coast refineries continued to supply a decreasing proportion of the demand, including exports, in the Atlantic Coast states. Although production increased during 1927, it amounted to 45.4 per cent of the areal demand, as compared with 48.8 per cent in 1926, and 49.2 per cent in 1925. Refinery stocks of gasoline continued to be drawn upon to meet the demand, storage having been decreased by 2,610,000 bbls. during the year, as compared with the decrease of 654,000 bbls. in 1926.

Production of kerosene by Atlantic Coast refineries during 1927 totaled 10,416,000 bbls., which was slightly more than the indicated consumption of 10,156,000 bbls. computed for the Atlantic Coast area. Receipts from Gulf Coast, California, and foreign ports furnished the balance between production and total distribution. Virtually all of the kerosene received from other refining areas was shipped from Gulf Coast ports. These shipments during 1927 totaled 5,931,000 bbls., as compared with 5,479,000 bbls. during 1926. Exports of kerosene from Atlantic Coast ports comprise 40 per cent of the distribution and totaled, for 1927, 6,735,000 bbls.

Production of gas oil and fuel oil at Atlantic Coast refineries during 1927 totaled 74,458,000 bbls., an increase of 14,486,000 bbls., or 19.5 per cent over 1926. The Atlantic Coast refinery production of gas oil and fuel oil supplied 60.5 per cent of the total quantity distributed, as compared with 51.5 per cent supplied by areal production during 1926. Production of gas oil and fuel oil at Atlantic Coast refineries during 1927 averaged 49.5 per cent of the total crude run to stills, as compared with 46 per cent during 1926.

Deliveries of gas oil and fuel oil within the Atlantic Coast area during 1927 totaled 107,790,339 bbls., as compared with 110,157,469 bbls. during 1926, a decrease of 2,367,070 bbls., or 2.15 per cent. These comparative figures do not include exports or shipments to states outside of the Atlantic Coast area which amounted to 1,916,000 bbls. and 691,000 bbls. respectively, during 1927, and 1,876,000 bbls. and 861,000 bbls. respectively, during 1926. A decreased demand for gas oil and fuel oil in the South Atlantic states accounted for virtually all of the Atlantic Coast decrease.

Deliveries of gas oil and fuel oil to gas and electric power plants showed a decrease of approximately 1,700,000 bbls., noticeable particularly in New York and Pennsylvania. Among several reasons for this decline were included changes in gas manufacturing processes which substituted coke-oven gas for water-gas, increased economy of steam generators, and the purchase from petroleum refineries in substitution of the manufacture of artificial gas.

Deliveries of fuel oil to steamships increased from 32,336,039 bbls. in 1926 to 34,128,492 bbls. in 1927. Aside from the general increase in bunker deliveries, the principal item of interest is the decrease reported for Pennsylvania of approximately 2,500,000 bbls. and the increase for New York and New Jersey of approximately 5,000,000 bbls., indicating that steamships are taking deliveries of bunker oil in New York harbor rather than at Philadelphia.

An indication of the growth of oil burning for the heating of buildings is found in the increase in deliveries for commercial and domestic heating, which advanced from 7,989,000 bbls. in 1926 to 9,836,000 bbls. in 1927. These totals include only the light and heavy fuel oils delivered for the heating of buildings, or the operation of boiler plants in commercial buildings. Deliveries of furnace oils and light distillates were not included in the survey, but it is estimated that such deliveries would increase the Atlantic Coast total consumption for the heating of buildings by 2,000,000 bbls. The present tendency towards the use of heavier grades of oil for domestic heating, as well as the increasing number of installations, is shown by the increase in deliveries of light and heavy fuel oil for domestic heating from 1,331,000 bbls. in 1926 to 2,306,000 bbls. in 1927.

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The Pure Oil Company has its own crude producing fields . . . its pipe lines . . . its own large, modern refineries . . . its tank steamers and tank cars . . . its private telegraph lines.

In the producing, refining and marketing of Pure Oil products, every one of the hundreds of jobs—from the nearest sales office to the farthest oil field—is manned by Pure Oil employes . . . over 8,000 of them.

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Box 552, Beaumont, Texas

NEW LOCATIONS IN TEXAS PANHANDLE AND NORTH AND WEST TEXAS FIELDS

TEXAS PANHANDLE

Carson County

Beaudoin and others' No. 1 C. C. Barnard, 330 feet south and west of the northeast corner of the east 80 acres of the SE of Section 23, Block 4, I.&G.N. Survey.

Gray County

LeFors Petroleum Co.'s No. 5 J. M. Shaw, 288 feet south and 1,091 feet west of the northeast corner of the T. Leach Survey. Same company's No. 6 J. M. Shaw, 242 feet north and 226 feet west of the southeast corner of the T. Leach Survey. Magnolia Petroleum Co.'s No. 1 G. H. Saunders, 330 feet north and west of the SE cor. of the W half of the NW of Section 4, Block 1, A.C.H.&B. Survey. Shamrock Oil Co.'s No. 1 W. S. Clayton, 330 feet south and east of the northwest corner of the east 278.4 acres of Section 50, Block 25, H.&G.N. Survey. The Texas Company's No. 4 S. W. McLarty and others-A, 330 feet south and 794 feet west of the NE cor. of the W half of the SW of Section 1, Block 1, A.C.H.&B. Survey. McIlroy Oil Co.'s No. 2 B. Bull, 155 feet south and 240 feet east of the northwest corner of the east 87.3 acres of Section 3, Block B-2, H.&G. N. Survey. Phillips Petroleum Co.'s No. 3 Johns, 330 feet north and west of the SE cor. of the SW of Section 87, Block 3, I.&G.N. Survey. Pure Oil Co.'s No. 3 H. M. Davis, 330 feet south and east of the NW cor. of the NE of Section 86, Block 3, I.&G.N. Survey.

Hutchinson County

Phillips Petroleum Co.'s No. 2 J. M. Sanford-Pool, 330 feet north and east of the southwest corner of the south 40 acres of the east 80 acres of the north 160 acres of the south 320 acres of Section 82, Block 46, H.&T.C. Survey.

Wheeler County

Canadian River Oil Co.'s No. 1 Williams and Laycock, 330 feet south and west of the NE cor. of the NW of Section 2, Block 27, H.&G.N. Survey.

NORTH CENTRAL AND WEST TEXAS

Andrews County

Deep Rock Oil Co.'s No. 2 W. J. Harris, cor. of Section 20, Block A-46, School Land.

Archer County

Brown & Lickey's No. 1 Mrs. A. B. Wallace, 150 feet north and west of the southeast corner of the south 30 acres of the west 60 acres of the S half of Section 11, Denton County School Land, League 3, A-117. Kemrow Production Co.'s No. 2 J. W. Campbell, 657 feet south and 786 feet east of the NW cor. of Section 1, Denton County School Land, League 3, A-117. American Refining Co. and Corlett & White's No. 1 J. F. Cernosek, 150 feet south and west of the northeast corner of the south 40 acres of the J. F. Cernosek 160-acre tract out of Section 2,409, T.E.&L. Survey. C. W. Gilliland's No. 5 W. F. Niemeyer, 150 feet south and east of the northwest corner of the south 80 acres of the west 160 acres of Section 2,415, T.E.&L. Survey. Madden & Hunt's No. 3 J. T. Richardson, 1,650 feet north and 150 feet east of the southwest corner of the west 125 acres of the south 250 acres of the north 450 acres of the J. T. Richardson 995-acre tract out of Section 1, South Anderson Ranch Subdivision. Madden & Hunt's No. 4 J. T. Richardson, 450 feet north and 150 feet east of the southwest corner of the west 125 acres of the south 250 acres of the north 450 acres of the J. T. Richardson 995-acre tract out of Section 1, South Anderson Ranch Subdivision. Magnolia Petroleum Co.'s No. 16 N. D. Goldsmith, 150 feet south and 450 feet west of the northeast corner of the west 40 acres of the east 60 acres of Section 5, South Anderson Ranch Subdivision. Pandem Oil Corp.'s No. 1 T. B. Wilson, 150 feet south and 1,344 feet west of the northeast corner of the M. Hutchinson Survey No. 107, A-172. O. C. Reed and others' No. 1 A. F. Ickert, 420 feet south and 450 feet east of the northwest corner of the north 33 acres of the west 110 acres of Section 17, Crawford Subdivision. The Texas Company's No. 17 J. T. Richardson, 450 feet south and 150 feet west of the NE cor. of Section 6, South Anderson Ranch Subdivision. Wichita Production Co. and others' No. 1 J. T. Richardson-B, 750 feet north and 150 feet east of the southwest corner of the east 125 acres of the south 250 acres of the north 450 acres of the J. T. Richardson 995-acre tract out of Section 1, South Anderson Ranch Subdivision.

Borden County

Condor Oil Co.'s No. 1 Ellis A. Hall, 1,650 feet south and west of the NE cor. of Section 5, Block 32, T-3-N, T.&P. Survey. (Shown as E. Dick Slaughter.)

Brown County

Anna Belle Oil Co.'s No. 11 Roy Hickman, 150 feet north and west of the southeast corner of its 80-acre lease out of Thomas Benson Survey No. 783. W. V. Ballard's No. 1 George S. Baugh, 1,700 feet north and 600 feet east of the southwest corner of the John C. Neal Survey No. 638. Kone Production Co.'s No. 17 Roy Hickman, 150 feet south and 1,650 feet east of the most westerly northwest corner of lease out of the Thomas Benson Survey No. 783. S. P. Mitcham and others' No. 1 A. E. Keeler-C, 150 feet north and west of the southeast corner of the south 20 acres of the west 50 acres of the north 100 acres of the A. E. Keeler tract out of the J. Kinney Survey No. 624. Texas-Fidelity Oil Corp.'s No. 1 G. T. Butler, 1,400 feet north and 2,400 feet west of the most southerly southeast corner of the G. T. Butler 215.68-acre tract out of the T. Benson Survey No. 783, being 150 feet north and west of the southeast corner of their 45-acre lease. Usonia Production Co.'s No. 1 I. B. Gaines, 150 feet south and 450 feet east of the NW cor. of the SE of the SE of Section 43, H.T.&B. Survey.

Callahan County

E. W. Ames and others' No. 1 E. L. Finley, 1,000 feet south of the northeast corner and located on the east line of Section 11, Deaf and Dumb Asylum Land.

Clay County

Allen & Loughley's No. 1 G. W. White, 150 feet south and east of the northwest corner of the G. W. White 165-acre tract out of the J. B. Atkinson Survey, A-1. F. L. A. Hamilton and others' No. 1 F. T. Wade, 150 feet north and west of the southeast corner of the west half of the F. T. Wade 80-acre tract out of Lot No. 12, Raymond Daily Survey, A-107. F. L. A. Hamilton and others' No. 1-A F. T. Wade, 150 feet north and 300 feet west of the southeast corner of the west half of the F. T. Wade 80-acre tract out of Lot 12, Raymond Daily Survey, A-107. Eastern Petroleum Corp.'s No. 7 John Barry, Jr., 764 feet south and 150 feet east of the northwest corner of Lot No. 15, Section 2,642, T.E.&L. Survey. Stump & Co.'s No. 1 H. Boddy-B, 2,790 feet northeast of the southwest line and 1,170 feet northwest of the southeast line of Section 1, H.T.&B. Survey, A-222.

Coleman County

Magnolia Petroleum Co.'s No. 21 J. P. Morris, 1,291 feet south and 1,150 feet west of the northeast corner of the J. D. Davidson Survey No. 80. Magnolia Petroleum Co.'s No. 22 J. P. Morris, 700 feet south and 600 feet west of the northeast corner of the Charles Shepherd Survey No. 727. Roth & Faurot's No. 4 Sealy & Smith, 264 feet north and 792 feet west of the SE cor. of the NW of Section 19, Block 1, G.H.&H. Survey.

Cooke County

W. D. Griffith and others' No. 1 D. B. Wheelock, 150 feet south and west of the northeast corner of the D. B. Wheelock 213.5-acre tract out of the William Teal Survey, A-1,036. W. E. Benson and others' No. 1 W. H. Dougherty, 2,358 feet south and 1,746 feet west of the northeast corner of the Bushnell Garner Survey, A-396. T. S. Stoneman's No. 1 R. B. Poteet, 1,560 feet south and 150 feet east of the northwest corner of the J. L. Stephens Survey, A-1,001.

Culberson County

W. S. Hillyer's No. 1 McGregor, C of

Honest Results

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Layne Screen has been giving honest results for more than a quarter of a century. Maximum production has always been a feature of this screen as compared with other screens but the new type Milled Groove Screen has increased production from 33 1-3% to 100% over the old style screen.

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What is

NO-CO-RO?

answer

an alloy made according to a private analysis, and specifically suited to oil-industry conditions. Its chief characteristics are—

It will not chip

used in a well where 24 balls and seats were used *each month*, a DROP & Seat made of NO-CO-RO was still operating six months after installation.

It will not pit

Not a single buyer of NO-CO-RO DROPS & Seats has failed to buy again!

It will not Corrode

23,000 balls and seats made of NO-CO-RO were sold to one company; all were inspected—and not one rejected.

..and it is obtainable

Only

in the products of

NORRIS BROTHERS, INC.

Robinson, Ill. Owensboro, Ky. Fort Worth, Texas

NW of Section 14, Block 81, School Land. (Shown as D. Taylor.)

Eastland County

Stalker Oil Co.'s No. 1 Mrs. O. C. Holcomb and others, 1,193 feet south and 450 feet west of the northeast corner of the J. House Survey.

Howard County

Andrews & McCamey's No. 1 J. B. Neal, 200 feet south and west of the NE cor. of Section 17, Block 32- T-1-S, T.&P. Survey. (Shown as Kloh & Rumsey.) F. H. E. Oil Co. and others' No. 6 Dora Roberts, 2,360 feet south and 330 feet east of the NW cor. of Section 137, Block 29, W.&N.W.R.R. Survey. Magnolia Petroleum Co.'s No. 11 Kelly-Chalk, 1,660 feet south and 330 feet east of the NW cor. of Section 124, Block 29, W.&N.W. R.R. Survey. Marland Production Co.'s No. 2 H. R. Clay-E, 250 feet south and 1,570 feet west of the NE cor. of Section 138, Block 29, W.&N.W. Survey.

Irion County

Signal Oil Co.'s No. 1 J. D. Suggs, C of NW of Section 9, Block H, T.C.R.R. Survey.

Jack County

Osage Oil Corp.'s No. 1 R. R. Clayton, 2,293 feet north and 2,519 feet west of the most southerly southeast corner of the Lewis Knight Survey, A-324.

Jones County

Atkinson & Sandefer's No. 1 W. R. Hudspeth, midway east and west and 300 feet south of the north line of Section 22, Ed Miles Survey, A-259. Cosden & Co. and Herbert Oil Co.'s No. 1 C. A. Bickley, 320 feet north and 319 feet east of the SW cor. of the S half of the NW of Section 50, Block 18, T.&P. Survey. Same companies' No. 2 C. A. Bickley, 330 feet south and 319 feet west of the NE cor. of the S half of the NW of Section 50, Block 18, T.&P. Survey. Cranfill & Reynolds and Dilworth's No. 1 C. A. Bickley, 510 feet north and 150 feet east of the SW cor. of Section 50, Block 18, T.&P. Survey. Independent Oil & Gas Co.'s No. 1 A. T. Smith, 330 feet north and west of the southeast corner of the west 95 acres of the A. T. Smith 200-acre tract out of Section 51, Block 18, T.&P. Survey. McMan Oil & Gas Co.'s No. 1 C. A. Bickley, 1,650 feet south and 2,320 feet west of the NE cor. of Section 50, Block 18, T.&P. Survey. Phillips Petroleum Co.'s No. 6 J. R. Walling-Tessie, 330 feet south and 1,635 feet east of the NW cor. of the S half of Section 19, Block 19, T.&P. Survey. Robert Oil Corp.'s No. 4 J. H. Grayson, 812 feet north and 330 feet west of the southeast corner of lease out of Section 13, Block 19, T.&P. Survey. Roeser & Pendleton and Landreth Production Corp.'s No. 1 J. H. Grayson-B, 330 feet north and 288 feet west of the southeast corner of the J. H. Grayson Survey No. 3, A-1,771. Snowden & McSweeney's No. 2 C. A. Bickley, 330 feet south and 959 feet west of the NE cor. of the N half of the NW of Section 50, Block 18, T.&P. Survey. Same company's No. 3 C. A. Bickley, 970 feet south and 319 feet west of the NE cor. of the N half of the NW of Section 50, Block 18, T.&P. Survey. The Texas Company's No. 2 Laura Carter, 812 feet north and 330 feet east of the southwest corner of the L. Carter 173.5-acre tract out of Section 13, Block 19, T.&P. Survey.

Montague County

Bridwell Oil Co.'s No. 6 M. H. Salmon-A, 475 feet south and 1,100 feet east of the northwest corner of 62-acre "A" lease out of the F. Robertson Survey, A-620. Pure Oil Co.'s No. 6 L. Keck-A, 2,310 feet north and 200 feet east of the most westerly southwest corner of their lease "A" out of Lot 5, J. W. Jones Subdivision, William Donohoo Survey, A-178. Superior Oil Producing Co.'s No. 1 O. N. Miller, 575 feet south and 2,490 feet west of the northeast corner of the O. N. Miller tract out of the W. J. Wells Survey, A-844.

Throckmorton County

Erin Production Co.'s No. 1 S. R. Davis, 858 feet north and 304 feet east of the southwest corner of the G. G. Alford Survey, A-2.

Stephens County

The Texas Company and others' No. 1 J. M. Gholson and others, 1,334 feet south and 1,827 feet east of the northwest corner of the L. C. Dennison Survey. Texas Pacific Coal & Oil Co.'s No. 12 A. S. Veale, 1,700 feet north and 750 feet west of the SE cor. of Section 1,428, T.E.&L. Survey.

Upton County

Humble Oil & Refining Co.'s No. 9 R. Ricker, 5,574 feet southwest of the northeast line and 2,270 feet southeast of the northwest line of Section 5, Mary S. Denton Survey, A-127.

Wichita County

Empire Holding Corp.'s No. 7 G. B. Ancell and others, 150 feet north and 750 feet east of the SW cor. of the NE of the SW of Section 11, Block 7, H.&T. C. Survey. Hammon & Garrett's No. 2 J. E. Terhune, 200 feet south and 150 feet east of the northwest corner of the J. E. Terhune 282.7-acre tract out of the John M. Sharp Survey, A-262. Magnolia Petroleum Co.'s No. 3 J. R. Pace, 150 feet south and 424 feet east of the northwest corner of the south 53.26-acre tract out of the J. R. Pace 347-acre tract out of the R. J. Scott Survey, A-255. O'Donohoe & Gates' No. 2 M. P. Bishop, 150 feet north and west of the southeast corner of the east 30 acres of the north 50 acres of the north 80 acres of the south 160 acres of the M. P. Bishop tract out of the L. Netherly Survey, A-240. United Producers Co.'s No. 1 W. L. Hodges, 150 feet north and 750 feet west of the southeast corner of the W. L. Hodges 214-acre tract out of Section 1, H.T.&B. Survey, A-139. W. C. Witcher's No. 1 Ward & Todd, 150 feet north and 517 feet east of the southwest corner of Lot 3, Ward & Todd Subdivision, Section 6, G.C.&S.F. Survey, A-625.

Wilbarger County

Derby Oil Co.'s No. 4 W. T. Waggoner-A, 660 feet south and 4,110 feet west of the NW cor. of Section 5, Block 5, H.&T.C. Survey, and located in the Thomas D. Purnell Survey.

Winkler County

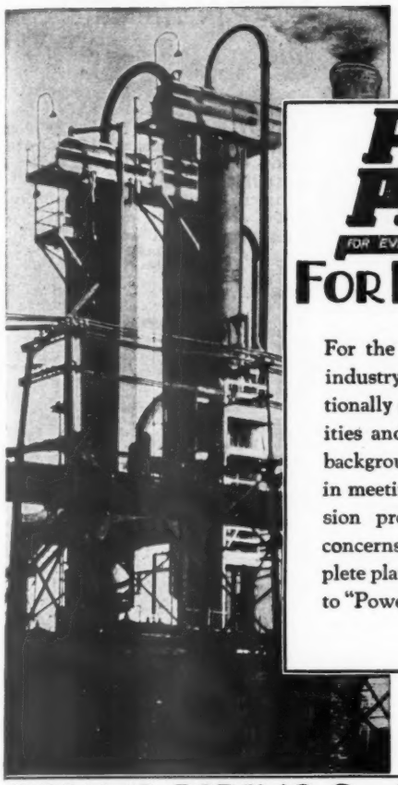
Cranfill & Reynolds' No. 1 T. G. Hendrick-F, 660 feet south and 2,310 feet east of the NW cor. of Section 16, Block 26, School Land. Magnolia Petroleum Co.'s No. 1 W. F. Scarborough, 2,310 feet north and 990 feet west of the SE cor. of Section 1, Block C-22, School Land. Marland Production Co.'s No. 3 T. G. Hendricks-B, 330 feet north and 1,650 feet east of the SW cor. of Section 34, Block 26, School Land. Prairie Oil & Gas Co.'s No. 1 E. W. Cowden, 2,310 feet north and 330 feet east of the SW cor. of Section 3, Block B-12, School Land. Roxana Petroleum Corp. and The Texas Company's No. 4 E. W. Cowden-A, 2,310 feet south and 330 feet east of the NW cor. of Section 3, Block B-12, School Land. Skelly Oil Co.'s No. 2 T. G. Hendricks-B, 440 feet south and 1,650 feet east of the NW cor. of Section 39, Block 26, School Land. Southern Crude Oil Purchasing Co.'s No. 1 Ida Hendricks, T-88-D, 2,310 feet north and 330 feet west of the SE cor. of Section 4, Block B-12, School Land. Southern Crude Oil Purchasing Co.'s No. 2 T. G. Hendrick, T-88-R, 1,320 feet north and 330 feet east of the SW cor. of Section 27, Block 26, School Land.

Val Verde County

Producers Oil Co. and others' No. 1 Everett Brothers, 2,310 feet south and 330 feet east of the NW cor. of Section 40, Block DE, C.C.S.D.&R.G.N.G.R.R. Survey.

Young County

Atlantic Oil Producing Co. and Camp's No. 1 J. Marshall, 597 feet south and 150 feet east of the NE cor. of Section 1,370, T.E.&L. Survey, and located in Section 3,401. L. W. Callender's No. 2 J. W. Davis, 500 feet south and 150 feet east of the northwest corner of the east 50 acres of the north 160 acres of Section 1,395, T.E.&L. Survey. W. P. Chancellor's No. 1 J. W. Bishop, 1,614 feet north and 150 feet east of the southwest corner of the east 88.3 acres of Section 1,444, T.E.&L. Survey. Cooper & Britton's No. 1 L. Parrish, 150 feet north and 750 feet east of the SW cor. of Section 409, T.E.&L. Survey. Cunningham and others' No. 3 C. W. Johnson, 450 feet north and 750 feet east of the southwest corner of the east 40 acres of the west 80



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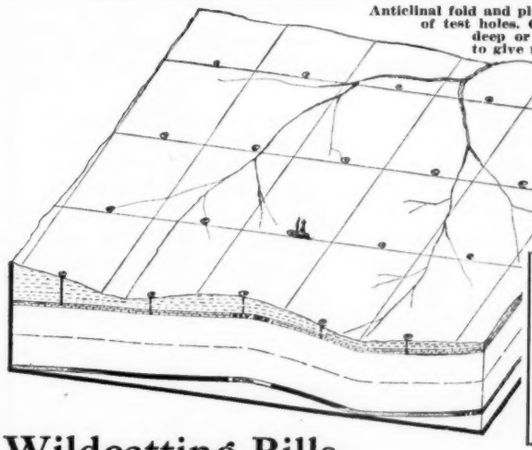

Anticlinal fold and plat showing location of test holes. Often, holes 50 feet deep or less are sufficient to give needed information.

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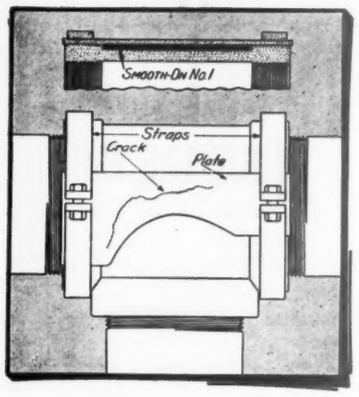
for labor and material on this repair—and avoided a much heavier loss from prolonged shutdown



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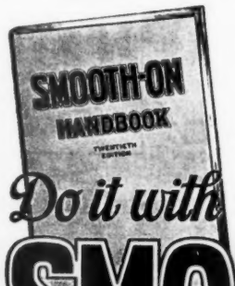

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10-4-28

acres of the south 200 acres of the C. W. Johnson 1,026-acre tract out of the E. W. Sergeant Survey, A-253. J. W. Halsell's No. 1 W. S. and J. P. Marshall, 150 feet south and east of the NW cor. of Section 617, T.E.&L. Survey. C. Kleiner and others' No. 3 J. H. Davis, 150 feet south and 1,193 feet west of the NE cor. of the S half of Section 1,487, T.E.&L. Survey. C. Kleiner and others' No. 19 C. W. Langston, 150 feet north and 1,267 feet east of the SW cor. of Section 1,490, T.E.&L. Survey. C. Kleiner and others' No. 20 C. W. Langston, 150 feet north and 275 feet east of the SW cor. of Section 1,490, T.E.&L. Survey. Mook-Texas Oil Co.'s No. 7 J. H. Davis, 450 feet south and 893 feet west of the NE cor. of the S half of Section 1,487, T.E.&L. Survey. Morrison & Smith's No. 1 C. F. Rowley, 1,024 feet north and 801 feet west of the SE cor. of Section 1,915, T.E.&L. Survey. W. H. Peckham's No. 1 J. S. Willett, 150 feet south and east of the NW cor. of Section 1,920, T.E.&L. Survey. Pennell Oil Co.'s No. 5 G. W. Johnson-C, 150 feet north and 750 feet east of the southwest corner of the west 50 acres of the east 75 acres of the north 145 acres of the south 346 acres of the C. W. Johnson 1,026-acre tract out of the E. W. Sergeant Survey, A-253. E. R. Riggs and others' No. 13 J. B. McKinley, 750 feet south and 1,522 feet east of the NW cor. of Section 1,489, T.E.&L. Survey. E. R. Riggs and others' No. 14 J. B. McKinley, 1,350 feet south and 1,522 feet east of the NW cor. of Section 1,489, T.E.&L. Survey. Shappell Oil Co.'s No. 4 D. Garrett, 190 feet north and 420 feet west of the SE cor. of the N half of Section 1,487, T.E.&L. Survey. W. R. Stafford's No. 1 C. P. Stewart, 783 feet north and 1,417 feet east of the SW cor. of Section 5, Young County School Land, A-1,284. R. E. Whatley and others' No. 1, S. M. J. Benson, 150 feet north and west of the SE cor. of Section 1,478, T.E.&L. Survey. D. L. Wolfe's No. 4 J. T. Lowe, 150 feet south and west of the NE cor. of the NW of Section 59, T.E.&L. Survey. Pandem Oil Corp.'s No. 1 N. Burch, 467 feet south and east of the NW cor. of Section 477, T.E.&L. Survey.

Corrected Locations

Archer County: Consolidated and Continental Oil Co.'s No. 1 W. O. Hayter, 1,050 feet north and 150 feet east of the SW cor. of the E half of Section 2,415, T.E.&L. Survey. Donahoo & Robinson's No. 1 J. H. Turbeville, 150 feet north and west of the southeast corner of the west 30 acres of Section 148, R. Carson Survey.

Brown County: Chestnut & Smith and Owens' No. 1 Ed Hennigan, 550 feet north and 750 feet west of the southeast corner of the Ed Hennigan 298-acre tract out of the M.E.P.&P. Survey No. 1, A-681. J. T. Dennis' No. 1 E. D. Mooren, 150 feet north and 660 feet west of the SE cor. of the NE of Section 30, H.T.& B. Survey. Garrett & Hammon's No. 5 A. L. Curry, 450 feet north and 150 feet west of the southeast corner of their 32-acre lease out of the J. Kinney Survey No. 624. Crown Petroleum Co.'s No. 1 W. D. McCulley, 1,065 feet northwest of the southeast line and 1,375 feet northeast of the southwest line of the W. D. McCulley 200-acre tract out of the John S. Thom Survey No. 53. Cranfill & Reynolds' No. 13 J. B. Eubanks, 2,508 feet south and 450 feet west of the northeast corner of the J. B. Eubanks 1,278-acre tract out of the Robert Mitchell Survey No. 141.

Coleman County: Bert Collins and others' No. 1 A. F. Holmes, 1,070 feet north and 1,070 feet east of the southwest corner of the George Waters Survey No. 114.

Gray County: Shamrock Oil Co.'s No. 1 A. Chapman, 330 feet south and west of the northeast corner of the east 80 acres of the SW of Section 50, Block 25, H.&G.N. Survey. Same company's No. 2 A. Chapman, 330 feet south and east of the northwest corner of the west 41.6 acres of the E half of Section 50, Block 25, H.&G.N. Survey. Travis & Smith's No. 1 A. Chapman, 330 feet south and west of the northeast corner of the west 80 acres of the SW of Section 50, Block 25, H.&G.N. Survey.

CRUDE STOCKS LESS IN THE GULF COAST

HOUSTON, Tex., Sept. 29.—Crude oil stocks in Gulf Coast, including Southwest Texas fields, totaled 24,958,285 bbls. on September 1. This was a decrease of 1,202,777 bbls. from figures of August 1. Of the total amount of crude stocks, 9,255,596 bbls. were in coastal terminal and refinery tank farms, the latter taking in considerable crude not produced in Gulf Coast or Southwest Texas fields. Stocks September 1 were:

GULF COAST FIELDS

Texas	Steel	Earthen
Batson	2,835	.....
Barbers Hill	1,000	.....
Big Creek	35,000	.....
Boling	12,775	.....
Damon Mound	12,925	.....
Dayton	1,000	.....
Goose Creek	161,070	84,588
Hull	285,677	.....
Humble	1,539,778	359,843
Liberty	30,550	.....
Markham	31,284	.....
Orange	165,723	.....
Pierce Junction	68,139	.....
Saratoga	52,594	.....
Spindletop	5,952,500	175,000
Sour Lake	1,372,725	326,662
West Columbia	1,135,573	731,318
Total	10,861,148	1,677,411
Louisiana		
Evangeline	52,650	.....
Edgerly	11,525	.....
Vinton	177,799	.....
Lockport	625,250	.....
Sorrento	1,500	.....
Total Louisiana	868,724	.....
Total Gulf Coast Fields, Sept. 1	11,729,872	1,677,411
Total Gulf Coast Fields, Aug. 1	11,583,040	2,633,335
Difference	146,832	955,924

COASTAL TANK FARMS AND TERMINALS

Englewood	1,117,051	.....
Norsworthy	309,150	.....
Pasadena	.....	.....
Sinco	610,000	.....
Webster	1,827,200	.....
Texas City	2,760,000	.....
Lynchburg	61,488	.....
Baytown	2,335,328	.....
Crosby	155,114	.....
Almeda	80,265	.....
Total Sept. 1	9,255,596	.....
Total Aug. 1	9,632,885	.....
Decrease	377,289	.....

SOUTHWEST TEXAS FIELDS

Luling	523,686	.....
Lockhart	26,400	.....
Laredo	1,745,320	.....
Total Sept. 1	2,295,406	.....
Total Aug. 1	2,311,802	.....
Decrease	16,396	.....

SPITZ PETROLOMETER BEING DEMONSTRATED

SHREVEPORT, La., Sept. 29.—Operators in the Shreveport division became interested in geophysical surveys of possible oil territory early in the history of such work, and on September 21 members of the Shreveport Geological Society had their introduction to the newest one appearing in this division, the Spitz Petrolometer.

Dr. Samuel Spitz, former lieutenant commander in the United States Navy, and his assistant gave a laboratory demonstration of the instrument and explained its principles and operation. Arrangements are under way for a field demonstration in one of the proven areas near Shreveport where depth of sand, its thickness, porosity and other characteristics are known. Meanwhile interests whose identity has not been revealed have arranged for a survey of a block they have in prospect for drilling.

Utah-California Petroleum Developing Co. of Los Angeles, owner of the rights to the instrument and its use, has done considerable work in Texas, Colorado, Utah and Montana and includes the discovery well of one of the newest Texas pools among the 100-odd successes it says it has recorded out of a total of slightly more than that number of locations. In its essentials the instrument is merely an application of the submarine detectors in use by the United States Navy during the war and by the Geodetic Survey in mapping ocean bottoms. Doctor Spitz asserts that oil and oil sands are the only formations that will not reflect sound waves, detection and measurement of the time element of which provide the basic principle of his method.

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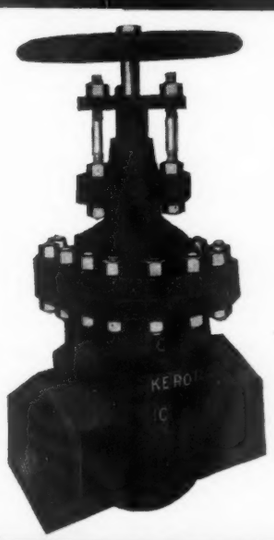

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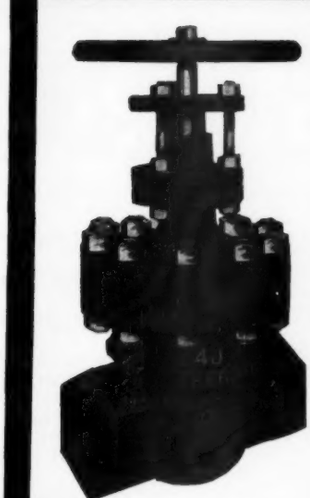

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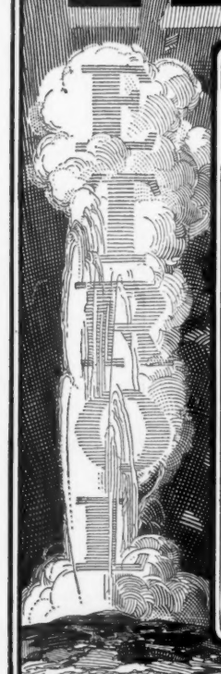
PETROL



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"OLD FAITHFUL"

TUBE ENDS ARE WELDED TO HEADER

(Continued from Page 138)

in one end a 4-inch seamless steel tube, which serves as an inlet to the header, which was inserted through a plug made of five-eighths inch plate, to which it was welded, the plug being in turn welded to the header as shown in detail "D-D" of the drawing. The opposite end of the header was closed by having a five-eighths inch plate welded therein, said plate being set back from the end of the header about one-half inch. Three holes were drilled through one side of the header and through these holes the ends of three of the tubes of the coil were inserted, the ends being milled off to a radius equal to the radius of the inside of the header and located flush therewith. Each of the tubes were then welded to the outside of the header as shown in detail "D-D" with one layer of metal, using three-sixteenths inch diameter electrodes, 200 amperes, 65 volts.

Method of Welding

The opposite ends of the three tubes previously mentioned were introduced, as shown in detail "C-C", through holes drilled through the side of a six-hole header, said ends being milled, and they being welded in, in the same manner as those previously described. This header was closed at each end by having a five-eighths inch plate welded therein, the plates being set back from the ends about one-half inch. The other three tubes which extended from the side of this header were treated in the same manner as those in the first mentioned header.

Five six-hole headers of similar arrangement to the one just described, were welded into place and the three outer tubes of the last six-hole header of the series were welded into a three-hole header at their opposite ends, in the same manner as those in the three-hole header previously mention. A 4-inch outlet tube was welded into the outer end of this header in the same manner as the inlet to the first mentioned three-hole header. This outlet was connected into the inlet of the next coil below. A series of 16 coils were made in the same manner as the coil just described, and when assembled in operating position were subjected to a cold water pressure test of 2,000 pounds per square inch, and no leaks developed.

In the operation of one of these cracking units, the oil is forced through the coils at an approximate rate of 120 bbls. per hour, at a pressure of 650 pounds per square inch, and at a temperature of 800 degrees Fahrenheit. A temperature of 1,500 degrees Fahrenheit is maintained in the furnace.

The cost of one completed cracking unit constructed as described herein, including the cost of installation, material for the headers, the milling of the ends of the tubes, the drilling of the holes in the headers, welding material and welding was $1,278.40.

Former Method

In constructing these cracking units, they have heretofore been made with a steel flange, screwed onto each end of each tube and semisteel return bends having flanges to correspond with the flanges on the ends of the tubes, were bolted thereto, with gaskets between the return bends and the flanges to provide a leak-proof joint. The cost for threading the ends of the tubes, for the steel flanges, for the semisteel return bends, and the bolts and gaskets, for one complete cracking unit of a type similar to the one herein described was $2,880.

The saving effected by the electric arc welding method of constructing one of these cracking units over the method heretofore employed was $1,601.60. Eighteen complete units were built by the electric arc welding method as herein described, and on these 18 units a total saving of $28,828.80 was effected.

Picture showing the finished welding job on condenser pipes and header.

During the operation of the units in which return bends and flanges were used, there was considerable loss from fires resulting from leaks which developed between the flanges and return bends, and around the threads of the flanges, which necessitated considerable loss of time in the operation of the unit, but in the units constructed by the electric arc welding method, there has been no losses from fires, and consequently no time has been lost in the operation of the units.

STRIPPING OIL SHALE

During the preparation of a Bureau of Mines bulletin on stripping and mining methods for various minerals, consideration was given the feasibility of stripping Colorado oil shale. An investigation of methods and costs led to the conclusion, already reached by many engineers who have considered the problem, that the mining of oil shale by stripping methods is feasible for only a few minor deposits.

ARGENTINE OPERATIONS

The Argentine Supreme Court has granted the Standard Oil Co., La Republica Oil Co. and the Nacional de Petroleos permission to continue operations in the Salta Province pending a decision in the action begun by the three companies to obtain re-establishment of mining rights which the Province of Salta has refused to recognize.

GEORGE BILLINGS DIES

KANSAS CITY, Mo., Sept. 29.—George Billings, oil man, formerly of Oklahoma, died on a train here en route to his home in Long Beach, Calif. Death was due to heart disease. He had just returned from a European tour.

KENTUCKY-TENNESSEE

(Continued from Page 67)

listed good for an initial of around 30 bbls.

Gray, McMahan and others' No. 1 on the John Fuqua farm, in the Jones Pool, over 3 miles west from Whitesville, is showing as good as 25 bbls.

C. E. Daugherty and others' No. 1 on the Salem Daviess farm, in the Red Hill district, looks like a 10-bbl. pumper.

D. C. Stimson and others' No. 4 on the Mayfield, in the Red Hill section, looks like a producer, but not yet connected up to tankage. There has been little water for drilling, the ditches and creeks being dry.

Field Pickups

William F. Black, after getting down close to 150 feet on the Mrs. Frannie Nall farm, near Hartford, Ohio County, pulled the casing and moved to a location 300 yards to the northeast and spudded in another hole.

The Eastern Gulf Oil Co. is drilling a test on the Landrum lease, near Cedar Church, in Ohio County. Fred Evans and others drilling in the old Hartford Pool, in the same county, are getting along near a depth to find something if anything is there. Moten King, R. W. Richards and others are getting near depth to find something at a test on the J. W. King farm, between Hartford and the Clear Run Pool.

The Lincoln Oil Co. encountered some gas in the well on the Arnold Shreve farm, near Barrett's Ferry, at Narrows.

The Ohio Oil Co. is due in with No. 4 on the Roach farm and No. 9 on the Lawrence Roby farm, in the Roby Pool, of Ohio and Daviess Counties.

George E. Backer, R. C. Shinn, Harry Irwin, Curtis Fleming and H. Howell of Lexington, Ky., have been looking over the western Kentucky fields, going out of Owensboro.

CENTRAL WEST FIELDS

(Continued from Page 67)

a second test on the C. Myers, Section 31. In Madison Township, August Welker abandoned Nos. 1 and 2 on his farm in Section 15. In Washington Township, M. P. McGee pulled out old No. 3 on the Jacob Nebb, Section 20, and W. W. Reineck did the same with Nos. 2 and 3 on the George Lang, Section 18.

In Troy Township, Wood County, between Toledo and Woodville, Russell M. Bell and others are drilling No. 3 on the William Roechen, Section 1. George W. Huffman and others are drilling No. 2 on the Mary Reitzel, Section 23, Perrysburg Township.

In the McClure Field, in Pleasants Township, Hancock County, the Wiser Oil Co. is drilling No. 11 on the H. W. and M. E. Rader, Section 11.

Central Ohio

Drilling activity prevails in the Central Ohio and adjacent fields, and the outlook is it will continue so for some time as the large gas companies are doing the bulk of the work. While there is a good gas pressure in most of the gas lines the owners wish to maintain it as the cold weather season is near by when a larger volume will be required to take care of the patrons. There are now more than 20 counties where the gas companies are doing development work.

In Ashland County, Orange Township, the best of the late completions anywhere in the field was that of the Ohio Fuel Gas Co., in No. 1-3,197 on the Ella Donley farm, Section 11. The Kemrow Co. got a fairly good gas producer in a second test on the James Fluke farm, Section 22, and is starting a second test on the John T. Fluke, Section 15. Logan Gas Co. is drilling No. 1-3,038 on the M. Johnson farm, Section 22. In Vermillion Township, the Ohio Fuel Gas Co.'s No. 1-3,173 on the W. R. Jones, Section 25, was a dry hole. Same company is drilling No. 1-3,276 on the Dwight Donelson farm, Section 24. The Kemrow Co. is drilling No. 3 on the Leo Hawks, Section 14.

In Medina County, Hinckley Township, the Ohio Fuel Gas Co. is drilling No. 1-3,240 on the E. E. Shank, Lot 37. The same company drilled in a nice gas well in No. 1-3,201 on the Fred L. Nobles, Lot 20, Eaton Township, Lorain County. Same company made a location for No. 1-3,302 on the George April, Lot 91, Grafton Township, also in Lorain County.

The Ohio Fuel Gas Co. made a location for a test on the E. M. Sahlabach farm, Section 6, Paint Township, Holmes County. The Logan Gas Co. is drilling No. 2-3,035 on the J. H. Tschantz, Section 14, Sugar Creek Township, Wayne County.

In the Cleveland Field, in Olmstead Township, Cuyahoga County, J. W. Cushing got a nice gas well at a test on the Martin Abt farm, Lot 22, and Hulse and Kundtz' test on the O. S. Upp, Lot 5, Dover Township, was a dry hole.

Coshocton County

In Clark Township, Coshocton County, the Ohio Oil Co.'s No. 1 on the Cinderella Mullet farm, is reported good for 75 bbls. initial production from a depth of 3,468-3,525 feet. Hope Construction & Refining Co.'s No. 1 on the Violette Hondenshall, Section 13, Pike Township, produced 20 bbls. initial from 3,226-80 feet. Same company's No. 1 C. Blair, Section 12, is reported dry. In Tiverton Township, same county, Bell Brothers' test on the William Phillips, Section 33, is a small gas well at from 739-45 feet. In Monroe Township, the Logan Gas Co. is drilling No. 1-3,027 on the Charles King, Section 4, and the Ohio Fuel Gas Co. is drilling No. 1-3,219 on the Ella McKelvey, Section 10, same township.

In Summitt County, Franklin County, F. A. Brendall and others' No. 1 Henry Schrieber, Section 33, is reported good for 3 bbls. John Arthur of Cleveland, Ohio, brought in an average gas well at a test on the J. Charles Easelburn farm, Section 25, Richland Township, same county. In Copley Township, same county, the Wiser Oil Co. has a light gas producer at a test on the F. and K. Tokios, Lot 13.

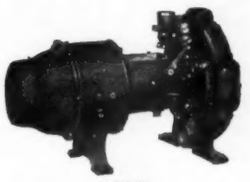
In Licking County, Fallsburg Township, the Emerald Petroleum Co.'s No. 3 on the Earl Rine, Section 12, is reported to have produced 48 bbls. in 24 hours from a depth of from 2,900-53 feet. Ohio Fuel Gas Co.'s No. 2-3,265 on the Madison H. Billman, Section 9, was dry in a sand at from 864-72 feet. Brown and others' No. 7 on the George Chapin farm, Section 10, is said to show from 12 to 15 bbls. initial. In Franklin Township, Ralph Brothers, Inc., found a 3-bbl. pumper at from 777-85 feet on the Boy Scouts farm, Section 15, Franklin Township. Hope Construction & Refining Co. struck a dry hole at a test on the Charles Taylor, Section 13, Hanover Township, at from 2,976-3,021 feet. Charles Vaughan is drilling No. 3 on the George Morrison farm, Section 4, Madison Township. The Pure Oil Co. is drilling No. 2 on the J. R. Eastworthy, Section 1, Hopewell Township, same county.

Muskingum County

In Clay Township, Muskingum County, Crawley and others drilled in an average gas producer in a test on the Jacob Rambo farm, Section 15. In Jackson Township, the Pure Oil Co. is drilling a test on the Zenetta Brown, Section 6. In Hopewell Township, the Whitehill Gas Co. is drilling No. 3 on the J. C. Francis, Section 6.

In Athens County, Ames Township, the Ohio Fuel Gas Co. found an average gas well in No. 2-3,270 on the J. E. Gifford, Fractional Section 3, in the second Berea sand at from 1,321-46 feet. Same company made a location for No. 1-3,299 on the Ohio Colliers Co.'s land, Section 24, Dover Township. F. J. Beasley is drilling a test on his own property, Section 3, Ames Township. In Lee Township, the Logan Gas Co.'s No. 1-3,024 on the Nora M. Barstow, Section 6, found a 3-bbl. pumper in the first Berea sand at from 1,278-82 feet, and is drilling No. 2-3,039 on the S. E. Searles, Section 12, same township. Same company is drilling No. 1-3,004 on the

Thorough Lubrication



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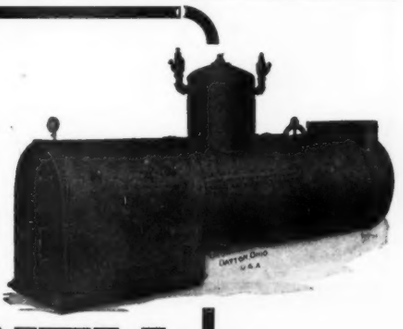

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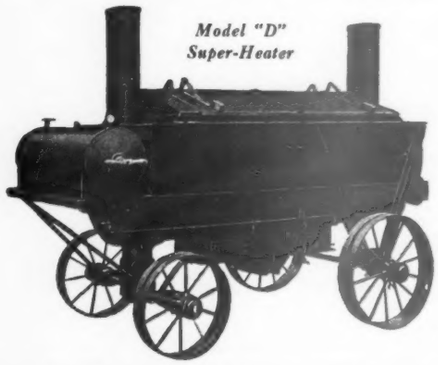

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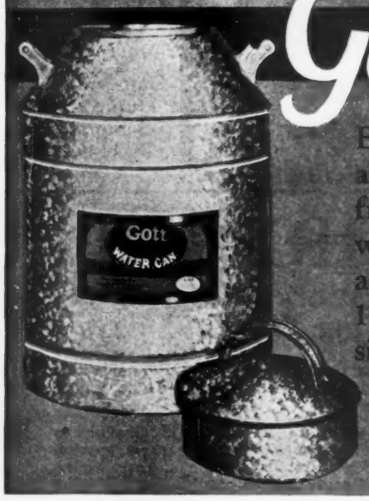

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on Pages 116-117

C. C. Snodgrass, Section 31, Carthage Township. Ohio Fuel Gas Co. is drilling No. 9-3,289 on the Black Diamond Coal Co.'s land in Fractional Section 23, Berne Township. Same company drilled a fair gas well at No. 1-3,187 on the Orland E. McGirr, in Fractional Section 4, in Lodi Township, at a depth of 735 feet. Stewart Brothers are drilling a test on the Grace A. Day, Section 7, same township.

In Meigs County, Tyree and others drilled a dry hole in No. 5 on the William Carnahan, Section 11, Sutton Township, in the first Cow Run sand, which was found at from 575-85 feet and sent to a total depth of 708 feet. Same parties are drilling No. 4 on the H. D. Carnahan, Section 11. Ohio Fuel Gas Co. is drilling No. 1-3,297 on the J. E. Stobart, Section 12, while the Wehrle Oil & Gas Co. got a dry hole on a test on the J. D. Carnahan, Section 5, same township. First Berea sand was found from 1,841-54 feet and drilled to a total depth of 1,937 feet. In Scipo Township, Lee Stout and others are drilling a test on the Charles Woodyard, Section 34. In Orange Township, same county, the Ohio Fuel Gas Co.'s No. 1-3,189 on the C. D. Bentz farm, Section 23, was a dry hole, the first Berea sand being found from 1,721-60 feet and drilled to a total depth of 1,830 feet. A dry hole was drilled by the Townsend Oil Co. on a test on the J. D. Carpenter, Section 16-17, Columbia Township, same county, also in same sand from 1,131-71 feet and sent to a depth of 1,210 feet. Sutton Brothers are drilling a test on the George Crouser, Section 23, Salisbury Township, same county.

In Franklin Township, Jackson County, the Ohio Fuel Gas Co.'s No. 1-3,185 on the Z. L. Dearing, Section 28, is an exceptionally good producer of gas from the Clinton lime at from 2,542-57 feet and drilled to a total depth of 2,559 feet. Same company made a location for No. 3-3,310 on the James A. McClure, Section 27, same township. Same company made a location for No. 1-3,282 on the Blanche E. Neary, Section 12, Coal Township.

In Symmes Township, Lawrence County, the Ohio Fuel Gas Co.'s No. 1-3,146 on the George Woolum, Section 26, was dry. Clinton sand in this well was found from 3,157-72 feet and the top of the Medina Stone, was found at 3,207 feet.

Scattered Development

In Ames Township, Guernsey County, the Ohio Fuel Gas Co. made location and has already started spudding at No. 1-3,260 on the C. B. Gallagher, Section 11, and is also drilling No. 1-3,252 on its own land, in Section 23. Same company is drilling No. 1-3,266 on the John Szuber, Section 4, Valley Township. Home Oil Co. is drilling No. 1 on the William Healey, Lot 13, Cambridge Township, same county. In Westland Township, the Eastern Carbon Black Co. is drilling No. 6 on the R. F. Ruby, Lot 11.

In Marion Township, Morgan County, Williams Brothers' No. 6 on the A. M. Hummel farm, Section 30, was a dry hole in the Hovis sand at from 147-60 feet and drilled in to a total depth of 210 feet. Ohio Fuel Gas Co. is drilling No. 2-3,233 on the C. D. Dugan, Section 24, also drilling No. 1-3,280 on the Carrie L. Smith, Section 29, same township. Bowman Oil & Gas Co. is drilling No. 1 Mary R. Mills, Section 26. Morgan Oil & Gas Co. is drilling a second test on the Thomas Ball, same section, and the Hollowell Co. is drilling No. 4 on the Rettie Syphers, Section 18.

In Penn Township, Morgan County, the Ohio Fuel Gas Co. is drilling No. 1-3,281 on the J. E. Benjamine, Section 3, and has made a location for No. 1-3,304 on the Ada Harper, Section 2. Bauman and others are drilling No. 5 W. H. Penrose, Section 2, and No. 29 on the J. P. and C. E. Hilaman, Section 14. Sutton Brothers are drilling No. 11 Charles S. Williams, Section 14, and Henning Brothers are doing likewise with No. 11 on the F. E. and B. Williams, Section 2. In Union Township, Van Fosson & Scott are drilling No. 29 on the Charles Harrison, Section 11. Jack Walters and others staked a location for a test on the Albert L. Giles, Section 27, York Township, same county.

Ohio Fuel Gas Co. staked a location for tests on the F. M. King and L. C. Stallings farms, both in Section 29, Franklin Township, Monroe County. Lucas & Thornberry are drilling No. 3 on the C. H. Hines, Section 3, same township.

Ohio Fuel Gas Co.'s No. 2-3,222 on the F. M. Johnson, Section 33, Stock Township, Noble County, is a light gas well at from 914-20 feet.

Worthy Rine and others made location for a test on the Carl Mercer, Section 10, Short Creek Township, Harrison County.

Indiana

Only two completions were reported from Indiana during the past several days, one being a real wildcat venture made by J. F. Denney and others on the SW cor. of the Jasper County Farm Co.'s 582 acres, in the SW cor., Section 5, Barkley Township, Jasper County, 1½ miles east of Gifford and the same distance south and west of what is known as the town of Asphaltum, and something like 4 miles west of the shallow natural lubricating oil field of 30 or more years ago. This well struck a heavy dose of salt water and was abandoned as a failure and plugged under supervision of the conservation division of the State Geological Department. This would indicate that the test was drilled to the west of the oil structure that is known to exist in that part of the county, although the Denney well had a slight rainbow of oil at around 80 feet.

The test of the Mich-Ohio Oil Co. on the Bennett Taylor farm, Section 17, Salem Township, Pulaski County, approximately 14 miles southeast of the Denny duster, is due to drill into the Niagara formation during the next few days but will be sent down into the Trenton sand. This test is on a well-defined structure.

In the old Trenton Rock area of northeastern Indiana, in Penn Township, Jay County, A. M. Jones drilled in a dry hole in No. 8 on the Bourne Brothers' No. 2 in Section 22. George S. Lacknett is drilling a test on the S. C. Tinkham, Section 28, Blue Creek Township, Adams County. In Salamonie Township, Huntington County, H. B. Wood plugged and abandoned old No. 2 well on the G. O. Tucker farm, Section 20.

The Illinois fields reported no completions and very few wells are drilling over the State.

STANDARD OF NEW YORK BESTS JERSEY COMPANY

NEW YORK, Sept. 29.—Golfers representing the executive force of Standard Oil Co. of New York triumphed over the club wielders of the Standard Oil Co. of New Jersey at the annual intercompany outing and golf tournament held at the Nassau Country Club, Glen Cove, Long Island.

The match was decided on the three-point, or Nassau, system, viz., one point for each nine holes, and one point for the match. Socony golfers won by the score of 22 to 13. The teams representing the two companies, and their opponents for the afternoon were as follows:

Socony	Standard of N. J.
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F. S. Fales	E. J. Sadler
W. F. Burt	F. H. Bedford, Jr.
A. F. Corwin	C. H. Haupt
T. E. Bresnan	A. Clarke Bedford
C. R. Auster	G. H. Michler
C. A. Ellis	E. Van Leuven
W. H. Correa	C. L. Bowman
R. A. McMurray	J. W. Casterton
C. B. Kingsley	G. W. Gordon
B. B. Jennings	Richardson Pratt
C. J. Skidmore	G. H. Tower

The Socony team, which had previously two legs up, thus won permanent possession of a silver trophy which had been put up by the two companies.

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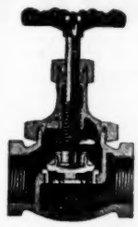

Fig. 1398, Globe Valve Screw Ends

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Fig. 1399, Globe Valve Flange Ends

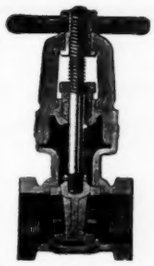

Fig. 1411, Gate Valve Screw Ends Screwed Yoke Bonnet

Fig. 1406, Gate Valve Flange Ends Flanged Bonnet and Yoke

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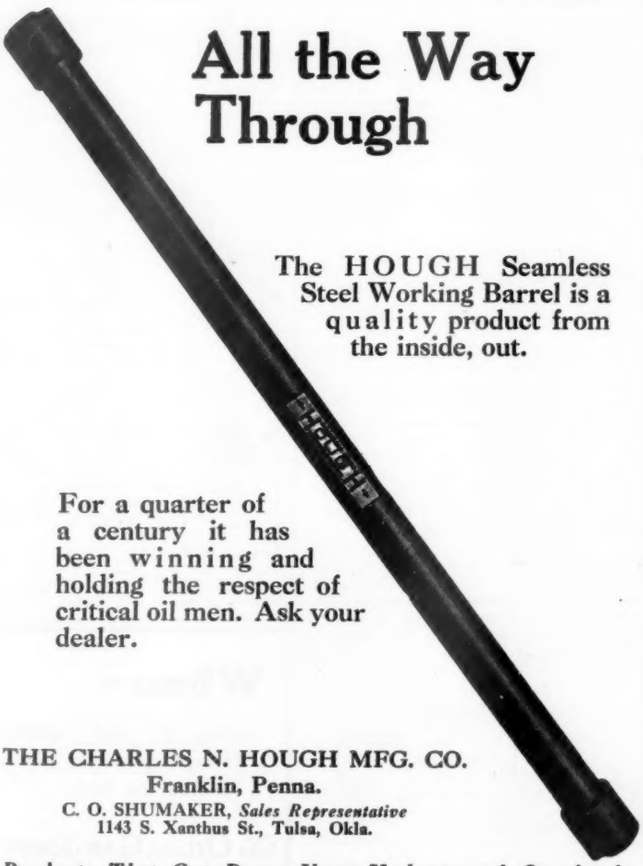

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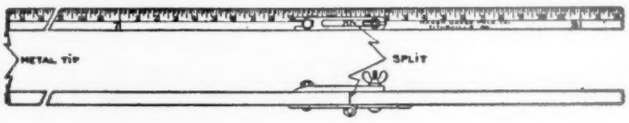

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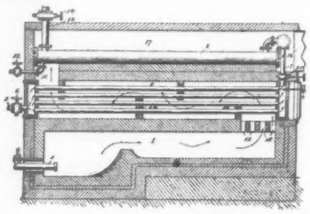
Recent Patents

1,670,122. Apparatus for Treating Hydrocarbon Oils. Robert T. Pollock, Boston, Mass., assignor to Universal Oil Products Co., Chicago, Ill., a corporation of South Dakota. Filed June 30, 1920, Serial No. 393,050. Renewed April 11, 1927. 3 Claims. (Cl. 196—116.)

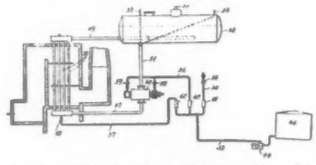


1. An apparatus for treating hydrocarbon oil, including an elongated furnace having a fire box at the lower side thereof, a baffle wall disposed above said fire box, said baffle wall being provided with openings adjacent one end thereof, a plurality of oil heating tubes disposed above said baffle wall, means for introducing oil to said tubes at one end thereof, means for discharging the oil from said tubes adjacent the open end of said baffle wall, a second baffle wall disposed above said tubes, means for conveying combustion gases away from said tubes at the end of said second baffle wall adjacent the inlet to said tubes, a vapor chamber disposed above said second baffle wall, and means for conveying oil from said tubes to said vapor chamber.

1,673,491. Process of Cracking Mineral Crude Oils. Henry Blumenberg, Jr., Moapa, Nev., assignor to A. M. Buley, Los Angeles, Calif. Filed May 18, 1927. Serial No. 192,494. 2 Claims. (Cl. 196—52.)

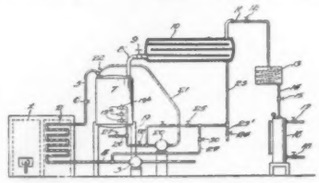
1. A process of cracking crude mineral oils comprising adding aluminum chloro sulphate to crude mineral oil heating the oil to cracking temperature, distilling the oil, and condensing the distillate.

1,676,203. Operation of Pressure Stills. Edward W. Isom, Winnetka, Ill., and John E. Bell, Brooklyn, N. Y., assignors to Sinclair Refining Co., Chicago, Ill., a corporation of Maine. Filed April 19, 1924. Serial No. 707,579. 8 Claims. (Cl. 196—59.)



4. A method of cracking oil, which comprises circulating the oil from and to a bulk supply tank through a heater maintained at a cracking temperature by and through a circulating pump having a drive shaft in loosely fitting bearings while maintaining the oil under superatmospheric pressure, feeding fresh oil to the still and forcing a substantial part of this fresh oil through the pump bearings into the hot circulating oil.

1,670,108. Process of Cracking Petroleum Oil. Gustav Egloff, Chicago, Ill., assignor to Universal Oil Products Co., Chicago, Ill., a corporation of South Dakota. Filed October 27, 1923. Serial No. 671,070. 7 Claims. (Cl. 196—58.)



1. A process for cracking petroleum oil consisting in passing the oil through a heating coil, where it is subjected to

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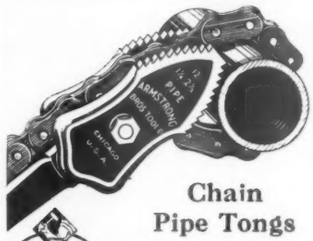

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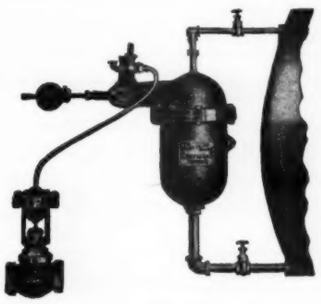

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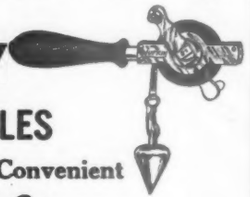

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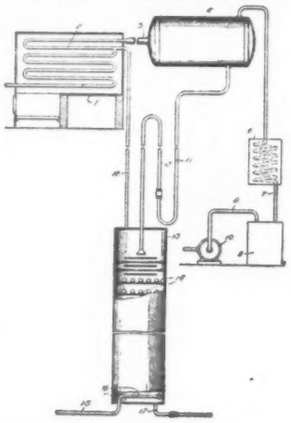
cracking conditions of temperature, thence to an expansion chamber removing vapors from said expansion chamber and subjecting them to a reflux condensing action withdrawing residuum from said expansion chamber and recirculating the residuum directly back through said expansion chamber where it is further distilled by returning the same to the vapor space of said expansion chamber, and returning the reflux condensate to said expansion chamber for further treatment.

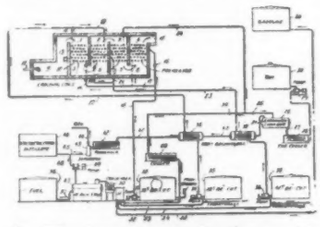
1,676,610. Art of Distilling Hydrocarbon Oils. Robert E. Wilson, Chicago, Ill., assignor to Standard Oil Co., Whiting, Ind., a corporation of Indiana. Filed December 22, 1924. Serial No. 757,395. 12 Claims. (Cl. 196—85.)



1. The method of distilling hydrocarbon oils which comprises passing such oil in a confined stream through a heating zone, discharging the stream of oil into an enlarged chamber, wherein separation of vaporized products takes place, removing unvaporized oil from said chamber and immediately subjecting said unvaporized oil to direct contact with steam, thereby completing the removal of the lighter constituents thereof, forcing the steam and vapors carried thereby into the stream of heated oil at an intermediate point in the heating zone, and maintaining a sufficient head of liquid in the discharge line from the vaporizing chamber to prevent return of steam and vapors therethrough.

11. In apparatus for the distillation of oil, a heating conduit, means for supplying oil and means for supplying steam thereto, means for heating said conduit, an enlarged separating drum, an unheated conduit larger than the heating conduit and connecting the outlet of the latter with the drum and means of removing vaporized and unvaporized products from the drum.

1,675,575. Method for Cracking Oils. Charles L. Parmelee, Orange, N. J., and Edward W. Isom, Winnetka, Ill., assignors to Sinclair Refining Co., Chicago, Ill., a corporation of Maine. Filed August 13, 1923. Serial No. 656,990. 2 Claims. (Cl. 196—58.)



1. The improvement in the cracking of oil in tubular cracking stills which comprises forcing the oil in a single-pass through a cracking coil and heating the oil therein to a cracking temperature under a high pressure, introducing a solvent oil into the partially cracked oil at one or more intermediate stages of its progress through the cracking coil, and preheating the solvent oil by heat interchange with the cracked oil or with distillates therefrom.

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS
Pipe Line Statement for July

Runs

Company—	Month bbls.	Div. a'c. bbls.
Prairie P. L. Co.*	4,402,000	142,000
Gulf P. L. Co.	1,219,250	39,331
Texas P. L. Co.	756,459	24,402
Magnolia Pet. Co.	2,176,105	70,197
Empire P. L. Co.	902,902	29,126
Cosden P. L. Co.	897,918	28,965
Sinclair P. L. Co.*	2,945,000	95,000
Oklahoma P. L. Co.	3,093,406	99,787
Other lines	5,611,000	181,000
Total July	22,004,040	709,808
Total June	21,676,381	722,546
Difference	327,659	12,738

Shipments

Prairie P. L. Co.†	5,701,370	183,915
Gulf P. L. Co.	1,220,922	39,385
Texas P. L. Co.	843,136	27,198
Magnolia Pet. Co.	2,070,569	66,793
Empire P. L. Co.	1,013,649	32,698
Cosden P. L. Co.	947,966	31,451
Sinclair P. L. Co.†	3,449,101	111,261
Oklahoma P. L. Co.	3,126,209	100,845
Other lines	6,200,000	200,000
Total July	24,599,922	793,926
Total June	23,770,154	792,336
Difference	829,768	1,590

Stocks

	Bbls.
Prairie O. & G. Co.	31,805,000
Prairie P. L. Co.	2,250,000
Gulf P. L. and Gypsy Oil Cos.	10,014,786
The Texas Company	7,019,095
Magnolia Pet. Co.	8,658,532
Empire P. L. Co.	3,818,574
Mid-Continent Pet. Corp.	3,222,243
Sinclair Crude Oil Pur. Co.	19,200,000
Carter Oil Co.	12,613,956
Oklahoma P. L. Co.	2,847,183
Other lines	11,700,000
Total July	113,149,369
Total June	115,062,424
Difference	1,913,055

*Estimated. †Prairie Pipe Line shipments include Texas crude oil and Sinclair shipments include Texas and Wyoming crude oil.

Note—Stocks do not include approximately 3,100,000 bbls. of crude oil held in storage on private tank farms and leases and approximately 700,000 bbls. of Texas Panhandle crude oil in storage in Oklahoma.

EASTERN PIPE LINE REPORT

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for July and August:

	July, 1928	Aug., 1928
Nat. Transit	165,615.08	170,904.52
S. W. Pa. P. L.	89,349.88	91,112.38
Eureka P. L.	378,775.12	381,023.25
Buckeye P. L. (Macksburg)	357,308.56	367,692.66
Buckeye P. L. (Cleveland)	12,112.31	11,928.55
Buckeye P. L. (Lima, etc.)	135,840.15	120,600.29
Indiana P. L.	6,957.57	7,013.10
Cumberland P. L.	238,113.18	223,338.19
N. Y. Transit	24,083.72	25,007.11
Tidewater P. L.	208,957.62	220,230.22
Pure Oil	62,195.75	65,261.50
Emery P. L.	57,824.37	61,506.60
Paragon Dev.	33,407.55	34,022.80
Stoll Oil Ref.	.....	10,447.17
Total	1,770,540.86	1,790,088.34
Daily average	57,114.22	57,744.78

Note—Indian Refining Co. also reported other receipts of 359,065.65 bbls. Paragon Refining Co. had other receipts of 138,475.29 bbls. Paragon Development had other receipts of 479.10 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky at the close of July and August:

	July, 1928	Aug., 1928
Nat. Transit	614,966.10	572,070.14
S. W. Pa. P. L.	440,368.20	462,872.37
Eureka P. L.	214,243.82	224,817.97
Buckeye P. L. (Macksburg)	123,124.43	148,487.46
Buckeye P. L. (Cleveland)	2,183.63	2,673.05
Buckeye P. L. (Lima, etc.)	1,492,535.14	1,512,473.28
Indiana P. L.	1,426,006.37	1,426,376.89
Cumberland P. L.	176,640.82	181,480.36
N. Y. Transit	255,219.66	213,009.28
Northern P. L.	152,913.50	316,097.83
Tidewater P. L.	172,170.23	177,158.38
Pure Oil	66,315.53	62,891.44
Emery P. L.	60,578.75	56,960.09
Paragon Ref.	283,389.07	189,693.84
Indian Ref.	362,367.80	393,569.13
Paragon Dev.	30,542.31	37,817.61
Total	5,873,565.39	5,978,449.12
Daily average	189,469.85	192,853.19

Gross Stocks

The gross stocks held by various pipe lines in the oil-producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky and Indiana for July and August.

	July, 1928	Aug., 1928
Nat. Transit	1,040,435.51	1,135,875.48
S. W. Pa. P. L.	764,368.72	713,493.58
Eureka P. L.	1,232,168.82	1,102,757.62
Buckeye P. L. (Macksburg)	600,776.71	540,894.00
Buckeye P. L. (Cleveland)	33,106.21	46,048.37
Buckeye P. L. (Lima, etc.)	3,898,453.21	3,717,960.51
Indiana P. L.	599,301.72	598,136.05
Cumberland P. L.	654,565.18	632,613.31
Southern P. L.	407,569.46	410,757.10
N. Y. Transit	813,273.44	706,795.19
Northern P. L.	515,379.92	458,296.62
Pure Oil	61,486.78	63,850.93
Emery P. L.	10,239.89	8,656.13
Paragon Ref.	74,719.14	23,167.67
Indian Ref.	103,324.84	69,892.18
Paragon Dev.	10,161.37	7,544.29
Total	10,819,330.94	10,236,743.03
Decrease	468,347.55	582,587.91

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of July and August showing the gross stocks of the above fields:

	July, 1928	Aug., 1928
Pennsylvania	3,467,816.71	3,368,647.01
Lima	920,587.50	965,466.57
Kentucky	1,082,799.96	993,362.71
Mid-Continent	5,281,388.89	4,857,572.08
Illinois	66,737.88	51,694.66
Total	10,819,330.94	10,236,743.03

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1925	1926	1927	1928
January	56,831	55,630	56,209	52,004
February	60,606	60,394	61,298	57,002
March	60,575	61,644	62,247	57,485
April	63,062	63,019	60,337	56,812
May	59,217	60,580	60,284	62,067
June	61,270	61,131	62,757	58,220
July	62,639	63,206	58,674	57,144
August	69,686	61,815	60,870	57,745
September	62,510	64,639	60,285	.....
October	145,388	161,132	147,036	.....
November	59,350	61,774	57,275	.....
December	57,974	58,755	53,089	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1925	1926	1927	1928
January	157,889	156,056	141,227	146,465
February	160,863	159,488	138,534	167,368
March	154,591	150,239	133,777	159,883
April	151,429	152,371	140,227	172,935
May	146,995	160,998	144,594	180,559
June	149,467	160,257	149,772	188,034
July	161,538	160,045	151,850	189,470
August	161,730	151,929	158,653	192,853
September	156,719	158,915	144,213	.....
October	145,388	161,132	147,036	.....
November	143,582	152,608	150,975	.....
December	150,162	136,428	144,504	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1926	1927	1928
January	9,859,170	9,718,008	12,276,710
February	9,579,354	10,119,162	12,180,419
March	9,435,292	10,794,044	12,235,725
April	9,805,851	11,112,295	11,740,126
May	9,531,757	11,359,381	11,602,468
June	9,585,904	11,493,673	11,287,678
July	9,734,687	11,458,128	10,819,331
August	9,058,947	11,989,115	10,236,743
September	9,436,732	12,212,716	.....
October	9,269,806	12,047,661	.....
November	9,257,067	11,939,740	.....
December	9,454,512	12,340,297	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

	Runs	Shipments	Stocks
1927—			
August	3,057.89	8,713.11	18,719.17
September	3,309.56	2,656.48	19,372.25
October	2,801.32	1,226.90	20,946.53
November	2,746.50	2,220.53	31,472.55
December	2,779.86	1,893.69	22,358.72
1928—			
January	1,886.06	2,424.70	21,819.99
February	2,460.14	3,109.34	21,170.79
March	2,578.86	3,540.33	20,209.32
June	3,153.08	2,779.02	17,922.58
July	2,902.50	3,628.02	17,197.06
August	2,874.11	2,350.13	17,721.04

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, September 1	2,178,792.89
Runs from wells	610,440.73
Other receipts	389,736.67
Regular deliveries	609,693.82
Other deliveries	573,783.43

The amount of Illinois oil run by the Tidewater Pipe Co. in August was 28,634.12 bbls. Deliveries were 62,170.20 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1927—	Runs	Deliveries
August	651,276.40	529,331.37
September	619,580.49	433,212.49
October	601,099.25	408,287.58
November	605,621.14	415,185.06
December	577,321.25	397,176.07
1928—		
January	561,759.57	434,147.00
February	573,619.78	450,217.81
March	725,250.82	520,595.69
April	526,013.13	448,282.44
May	632,968.64	522,980.51
June	608,552.49	625,087.33
July	608,286.49	565,678.37
August	639,074.85	671,864.02

Tidewater Pipe Co., Ltd., also delivered in August 209,887.86 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

Average bbls. per day—	Atlantic Ports: Baltimore	Boston	New York	Philadelphia	Others	Total	Gulf Coast Ports: Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
March	8,065	2,258	11,807	10,065	5,358	65,532	.....	.....	.....	.....	.....	65,532
April	9,033	9,167	24,133	18,167	7,867	37,452	.....	.....	.....	.....	.....	37,452
May	19,355	5,387	19,581	16,419	4,774	65,516	.....	.....	.....	.....	.....	65,516
June	11,800	.....	23,367	19,700	9,000	63,867	.....	.....	.....	.....	.....	63,867
July	19,807	2,903	8,774	20,419	2,452	54,355	.....	.....	.....	.....	.....	54,355
August	18,161	3,613	27,774	17,677	2,419	69,645	.....	.....	.....	806	806	70,451

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	Atlantic Ports: Baltimore	Boston	New York	Philadelphia	Others	Total	Gulf Coast Ports: Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
March	22,839	8,968	112,323	45,516	33,516	178,536	7,831	22,114	6,655	2,829	39,329	217,865
April	18,267	5,800	124,133	33,200	36,067	218,161	7,419	13,291	6,646	1,903	29,258	247,419
May	28,000	7,033	107,484	32,129	21,936	196,581	3,871	24,032	.....	1,904	29,807	226,388
June	24,900	12,233	119,867	41,667	19,300	217,967	1,833	15,567	2,167	.....	19,567	237,534
July	23,484	14,548	111,903	37,678	21,452	209,065	9,355	25,000	.....	774	35,129	244,194
August	25,290	16,323	123,226	21,613	7,194	193,645	.....	38,677	.....	613	39,290	232,935

GROSS PRODUCTION IN UNITED STATES FOR 12 MONTHS

(In barrels of 42 gallons)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountains	Eastern Fields	Total
August:	Month	19,279,131	26,283,350	17,682,927	3,442,240	3,242,600	2,221,202	2,489,021	3,571,000	78,221,471
	Daily average	621,907	847,850	570,417	111,040	104,600	71,974	80,291	115,194	2,523,278
September:	Month	19,064,500	24,111,660	18,322,800	3,341,340	3,032,970	2,027,070	2,268,630	3,465,000	75,633,970
	Daily average	635,483	803,722	610,760	111,378	101,099	67,569	75,621	111,774	2,521,133
October:	Month	19,448,893	24,247,053	19,200,093	3,509,169	3,117,298	2,058,889	2,258,885	3,400,000	77,240,285
	Daily average	627,384	782,163	619,358	113,199	100,555	66,416	72,867	109,677	2,491,622
November:	Month	18,516,467	23,083,380	18,628,290	3,313,650	2,906,760	1,956,960	2,234,730	3,302,500	73,942,737
	Daily average	617,216	769,446	620,943	110,455	96,892	65,232	74,491	110,083	2,464,758
December:	Month	18,938,823	22,298,417	19,840,009	3,427,174	2,962,750	1,927,148	2,400,578	3,219,900	74,924,799
	Daily average	610,930	716,400	640,000	110,554	95,576	62,166	77,438	103,868	2,416,924
January:	Month	19,028,228	20,978,320	20,034,981	3,319,325	2,791,922	1,805,015	2,429,375	3,133,000	73,510,166
	Daily average	613,814	676,720	646,967	107,075	90,061	58,226	78,367	101,064	2,371,296
February:	Month	18,038,459	19,294,426	19,645,488	3,079,887	2,571,575	1,759,606	2,230,887	3,166,000	69,786,328
	Daily average	622,016	665,324	677,431	106,203	88,675	60,676	76,927	109,173	2,406,425
March:	Month	19,118,320	20,162,524	21,466,632	3,379,031	2,687,948	1,871,158	2,401,911	3,522,000	74,609,524
	Daily average	616,720	650,404	692,472	109,001	86,708	60,360	77,481	113,613	2,406,759
April:	Month	18,280,729	19,096,830	21,845,428	3,412,260	2,472,600	1,915,020	2,370,810	3,231,000	72,624,767
	Daily average	609,357	636,564	728,180	113,742	82,420	63,835	79,027	107,700	2,420,836
May:	Month	19,231,866	19,443,355	21,191,561	3,367,809	2,843,847	1,926,036	2,525,043	3,619,000	74,248,517
	Daily average	623,609	627,205	683,599	108,639	91,737	62,130	81,453	116,742	2,395,113
June:	Month	19,164,244	18,482,981	19,802,520	3,202,050	3,075,911	2,112,149	2,425,470	3,394,000	71,659,325
	Daily average	638,808	616,099	660,084	106,735	102,530	70,405	80,849	113,133	2,388,644
July:	Month	19,754,458	18,809,498	22,155,335	3,171,548	2,792,139	2,237,738	2,492,586	3,472,000	74,885,302
	Daily average	637,241	606,758	714,688	102,308	90,069	72,185	80,406	112,000	2,415,655
Total 12 months		227,964,118	256,201,884	239,806,069	39,965,483	34,498,320	23,827,991	28,527,926	40,495,400	891,287,191
Daily average		622,853	700,005	655,211	109,196	94,258	65,104	77,945	110,643	2,435,211

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